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PATENT APPLICATION



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q84075

Yoshinori HONMA, et al.

Appln. No.: 10/516,551

Group Art Unit: Not Yet Assigned

Confirmation No.: 7075

Examiner: Not Yet Assigned

Filed: December 02, 2004

For: DISPLAY APPARATUS

**RESPONSE TO NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C.
371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)**

MAIL STOP PCT

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

In response to the "Notification of Missing Requirements Under 35 U.S.C. 371 in the United States Designated/Elected Office (DO/EO/US)," for the above application, Applicants respectfully submit the following.

The Patent Office is respectfully advised that the requested documents (i.e., the English translation of the application and the Declaration and Power of Attorney) were all previously filed on December 2, 2004. Copies of the documents as previously filed on December 2, 2004, as well as a date-stamped filing receipt, are attached for the Examiner's convenience.

No fee is believed to be due at this time. However, the USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to



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U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/516,551	Yoshinori Honma	Q84075

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INTERNATIONAL APPLICATION NO.	
PCT/JP03/06986	

I.A. FILING DATE	PRIORITY DATE
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CONFIRMATION NO. 7075
371 FORMALITIES LETTER



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NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as a Designated / Elected Office (37 CFR 1.495).

- Indication of Small Entity Status
- Copy of the International Application filed on 12/02/2004
- Copy of the International Search Report filed on 12/02/2004
- Copy of IPE Report filed on 12/02/2004
- Information Disclosure Statements filed on 12/02/2004
- Request for Immediate Examination filed on 12/02/2004
- U.S. Basic National Fees filed on 12/02/2004

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Translation of the application into English. Note a processing fee will be required if submitted later than 30 months from the priority date.
- Processing fee for providing the translation of the application and/or the Annexes later than 30 months from the priority date (37 CFR 1.492(f)).
- Oath or declaration of the inventors, in compliance with 37 CFR 1.497(a) and (b), identifying the application by the International application number and international filing date.
- \$65 Surcharge for providing the oath or declaration later than 30 months from the priority date (37 CFR 1.492(e)) is required.

SUMMARY OF FEES DUE:

Total additional fees required for this application is **\$195** for a Small Entity:

- \$65 Late oath or declaration Surcharge.
- \$130 for English translation surcharge required.

ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTHS FROM THE DATE OF THIS NOTICE OR BY 32 MONTHS FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

*A copy of this notice **MUST** be returned with the response.*

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PART 1 - ATTORNEY/APPLICANT COPY

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/516,551	PCT/JP03/06986	Q84075

FORM PCT/DO/EO/905 (371 Formalities Notice)

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Inventor(s): Yoshinori HONMA Nobuyuki HAYASHI

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IDS w/ISR/IPER and 10 Non-U.S. References Pr Doc: (WIPO)-(5)

English translation of: (1) International Application, (2) Article 19 Claim Amendments and (3) Specification after Amendment Under Article 34

Substitute Specification with red-lined version showing changes made, 10 sheets of annotated drawings, and 6 sheets of REPLACEMENT drawings
261229 - \$475.00

Fee: \$475 & \$40 Check Nos. 261230 - \$40.00 Attached By: PFN/tlb

SERIAL NO.:

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DISPLAY APPARATUS, DISPLAY METHOD AND ADVERTIZING METHOD USING THE
DISPLAY APPARATUSFIELD OF THE INVENTION

The present invention relates to a display apparatus, a display method and an advertising method using the display apparatus in which a laterally elongated display is changed in orientation in a vertical direction to be used as a vertical display and an image is displayed on this vertical display in real time from an image feeding unit.

BACKGROUND ART

A technical innovation of an image feeding unit such as a TV receiver, a VTR, a DVD, a camera and the like is remarkable and in this connection, a technical innovation of a display is also remarkable to attain a day-by-day development.

In particular, recently, a plasma display has been developed and put into practice so that a clear image may be displayed on a thin large-size display. Although it is still expensive, the image display technology has been drastically developed.

It is possible to clearly display a large-field realistic image without taking a large space by hooking such a plasma display for example on a wall or embedding it in a wall. However, this has not yet attained a satisfactory effect as an effective advertising means.

Namely, such a trial that a letter is superimposed on an image field by synthesizing with letter broadcasting or letter data or a letter telop is displayed in a marginal portion of the image field so that an advertising sentence may be displayed while a motion commercial film is displayed clearly has been already attained. However, it is hard to obtain the satisfactory advertising effect.

Even if a large-size plasma display is set not only at home but also in a place where people gather together, for example, shops, air ports, streets or the like and a clear advertising image is displayed there, although a temporary attention may be attracted to a beautiful large-size image field of this image, it is impossible to attract the attention to the contents of the advertisement.

In view of such a situation, as a result of repeated review and studies, the applicant

has found that its cause is largely due to the fact that the image is displayed on the laterally elongated display.

Namely, in the image display technology thus far proposed, a laterally elongated image such as cinema is regarded to be similar to a human view field, a clear image such as a photographic picture is realized as much as possible and efforts are made to a display method of a wide laterally elongated image field. As a result, almost all the up-to-date displays are of a laterally elongated display type.

Accordingly, it is safe to say that almost all plasma displays that is expensive but large in size and thin to make it possible to provide a realistic clear image are also of a laterally elongated display type.

However, even if such laterally elongated displays are used for advertisement, although they are beautiful, it is impossible to ensure the satisfactory advertising effect.

Namely, if the advertising image is displayed on a laterally elongated display, so far as it is not concerned with a very interesting advertisement away from the thus far established common concept (potential sense) to a person who watches the image, such recognition is only caused that it is simple television broadcasting or a VTR runs without any attention. Even if a special commercial image is displayed, such recognition that a simple television commercial film runs is formed and the advertisement effect exceeding the television broadcasting (television commercial film) will not be generated.

Therefore, the applicant who has found out a problem that even if the plasma display that is the highest in the up-to-date image display technology is used, it is impossible to expect the advertising effect for this reason conceived that the laterally elongated display was intentionally changed in orientation and the advertisement was displayed in the vertical display changed in orientation.

It was found that the method to display the advertisement on this vertical display was more effective than expected and it was the actual state that the applicant himself was surprised at its effect.

Namely, a so-called poster advertisement effect was exhibited and it was newly recognized how large the advertisement capability of the poster advertisement was.

Almost all the current advertisement poster is of a vertical type. For this potential

recognition, the vertical advertisement image may catch eyes and may be recognized as advertisement and attractive.

Accordingly, if the advertisement is displayed in a vertical manner, even if it is a motion picture, the advertisement may catch eyes and the advertisement is attractive to such an extent that the advertisement remains in brains as the advertisement poster on which the advertisement image is displayed while it was not recognized as simple television broadcasting or television commercial. Due to the appeal of the beautifulness of the image and the motion picture, the advertising information is propagated instantaneously.

If the poster advertisement is performed with a thin plasma display, the advertisement effect is more excellent due to the mobility and the clear beautifulness because of its thinness.

However, an advertisement means is being already practiced in which, while an attention is paid to this poster advertisement effect, a compiled advertisement image produced by a personal computer on a vertical display which is the laterally elongated display put in a vertical manner, or otherwise, in order to synthesize and display a motion picture, an image signal of a DVD or a VTR is once stored in the personal computer, the image is turned through 90 degrees by a software of the personal computer, and even if the image is displayed on the vertical display which is the laterally elongated display turned in a vertical manner, by this 90 degree turning process, the image may be displayed in a correct direction in the same manner as the manner that the image is displayed in the laterally elongated display.

However, according to this method in which the image is once stored in the personal computer and is turned through 90 degree, it is impossible to display various images on the longitudinal display in real time or to select, switch and display the images as desired.

Namely, according to the method in which the turning process is performed by using a 90 degree turning software in the personal computer and this is compiled and displayed on the vertical display, as a result, it is possible to display the motion picture on the vertical display which is the laterally elongated display like a poster advertisement but it is always necessary to perform the storage process in advance, which is troublesome. (In addition, not only does it need the time or steps but also the clearness of the image is remarkably deteriorated due to the process through the personal computer.)

Accordingly, conventionally, in order to use the vertical display while changing the orientation of the lateral elongated display and to display the image on the vertical display, it is necessary to perform the process in advance by the software. It is therefore impossible to perform the poster advertisement with the image in real time.

In other words, since the image is not displayed in real time, in order to switch this image to another image, for example, in the case the image of a DVD player or a VTR player is to be replayed and displayed, it is impossible to change the image to another image or video tape, to switch the program to TV broadcasting, to change broadcasting channels or to switch the image to a current camera image of a place where a camera is set only by exchanging pieces of DVD software. It is thus impossible to perform such switching operation at site as desired or to continuously display the image in real time.

On the other hand, basically, it is sufficient to prepare and obtain a number of vertical image sources. However, there are not many such image sources. Also, it is possible to produce the image while keeping the pickup camera is set in a vertical manner. However, this is also costly and hard to attain.

In contrast, almost all broadcasting image or conventional software for DVDs or VTRs is also of a laterally elongated display type.

In view of the foregoing difficulties, according to the present invention, it is possible to readily realize an advertising medium that exhibits an advertising effect that could not be attained at all by a laterally elongated image field (laterally elongated display), i.e., a remarkable eye catching effect caused by a poster advertising effect with a vertical display, in which an already present laterally elongated display, for example, a thin large-size laterally elongated plasma display which clearly displays image is set up while changing the orientation in a vertical manner to thereby readily realize the vertical display with ease, an image signal from an image feeding unit is subjected to a 90 degree turning process and outputted to the vertical display, and this is displayed in real time on the above-described vertical display.

In addition, for example, in the case where an image picked up by turning a video camera through 90 degrees for taking the entire human body as in a golf swing practice is watched at home, since the entire human body is displayed in orientation horizontally while

being turned through 90 degrees on a regular home TV (laterally elongated display), the image is very hard to watch unless the home display is turned through 90 degrees correspondingly. Even in case of such an image, it is possible to watch well the image while the image is displayed in a correct image orientation without rotating the home TV by performing the 90 degree turning process. For example, with such a system that a predetermined portion of the image data written in a memory is read out, such a trimming image signal that, for example, only a personal image is left out of the image signal from the image feeding unit is produced for the above-described vertical display. For example, the specified person is displayed on a large scale on the above-described large-size vertical display and it is therefore possible to enjoy the image while rectifying a scheme of the image as desired. Furthermore, of the above-described image signal, only the important object may be displayed without any extra space while using the entire display. Accordingly, in synergy with the eye catching effect exhibited by software in a personal computer or the like, it is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an extremely innovative, practical display apparatus, a display method and an advertising method using the display apparatus and the display method, in which the excellent advertising effect may be expected as a poster advertisement.

DISCLOSURE OF THE INVENTION

The essence of the present invention will now be described with reference to the accompanying drawings.

The invention relates to a 90 degree turning display apparatus for an image signal characterized by comprising a sequential scanning circuit for signal-converting a jump scanning type image signal into a sequential scanning type and a signal turning unit for turning the signal through 90 degrees, wherein the image signal turned through 90 degrees may be fed in real time to a display.

Also, the display apparatus according to claim 1 is characterized by comprising a sequential scanning type circuit for converting the inputted jump scanning type image signal

into a sequential scanning type, a memory for storing as image data the signal converted into the sequential scanning type, and an address generating circuit for writing the image data to a designated address of said memory and reading out the image data from the designated address, wherein the image data are turned through 90 degrees when reading out from said memory so that the image data may be displayed in real time on the display.

Also, the display apparatus according to claim 2 is characterized by comprising a decoder circuit for decoding an inputted jump scanning type analog video signal, a sequential scanning type circuit for converting the decoded jump scanning type analog video signal into a sequential scanning type, a memory for storing as the image data the jump scanning type analog video signal converted in the sequential scanning type, an address generating circuit for writing the image data to a designated address of said memory and reading out the image data from the designated address, and a D/A converter for making the read image data an analog signal, wherein the image data are turned through 90 degrees when reading out from said memory so that the image data may be displayed in real time on the display.

Also, in a 90 degree turning display method, a jump scanning type image signal is signal-converted into a sequential scanning type for turning the image signal through 90 degrees and the signal is turned through 90 degrees and fed and displayed in real time on a display.

Also, in the display method according to claim 4, the inputted jump scanning type image signal is converted into the sequential scanning type by a sequential scanning type circuit, the image is written in a memory, and the written image data are read out by an address that has been turned through 90 degrees whereby the image is turned and fed and displayed in real time on the display.

Also, in the display method according to claim 5, an inputted jump scanning type analog video signal is quantized and decoded by a decoder circuit, the quantized image data are converted into a sequential scanning type by the sequential scanning type circuit, the image is written in the memory on the basis of the address produced in the address generating circuit, read out on the basis of the address turned through 90 degrees and formed into an analog signal by a D/A converter to thereby turn the image to be fed and displayed in real time on the display.

Also, a display apparatus is characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 and making it possible for turning the written image data through 90 degrees, and an output section 5 for outputting the image signal to a laterally elongated display or a vertical display 6 set in a vertical direction by turning the laterally elongated display through 90 degrees, wherein the image signal outputted from the image feeding unit 1 may be fed and displayed to the laterally elongated or vertical display 6 in real time as the image signal turned through 90 degrees by said 90 degree image turning processing section 4.

Also, a display apparatus is characterized by comprising an input section 2 for inputting a jump scanning type image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a scanning type converting section 3 for converting into a sequential scanning type image signal the jump scanning type image signal inputted in real time from the input section 2 or an image signal whose image has been turned through 90 degrees (including 270 degrees), a 90 degree image turning processing section 4 for turning through 90 degrees (including 270 degrees) the image of the image signal converted into the sequential scanning type in real time or the jump scanning type image signal inputted in real time from said input section 2, and an output section 5 for outputting in real time the sequential scanning type image signal that has been turned through 90 degrees, wherein the image signal that has been turned through 90 degrees and outputted from the output section 5 is inputted to a vertical display 6 set by turning a lateral elongated display through 90 degrees and the image of the image feeding unit 1 may be displayed on the vertical display 6 in real time.

Also, a display apparatus is characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a scanning type converting section 3 for converting into a sequential scanning type image signal a jump scanning type image signal inputted in real time from the input section 2 or an image signal whose image has been turned through 90 degrees (including 270 degrees), a 90 degree image turning processing

section 4 for turning through 90 degrees (including 270 degrees) the image of the image signal converted into the sequential scanning type in real time or the jump scanning type image signal inputted in real time from said input section 2, an output section 5 for outputting in real time the sequential scanning type image signal that has been turned through 90 degrees, and an image synthesizing section 9 for synthesizing the sequential scanning type image signal turned through 90 degrees by said scanning type converting section 3 and said 90 degree image turning processing section 4 and blank display data of a sequential scanning type image signal produced by a computer, image data, letter data or the like, wherein the synthesized data signal including the image signal represented in real time from the image synthesize section 9 is outputted from said output section 5, the synthesized data signal including the image signal that has been turned through 90 degrees and outputted from the output section 5 is inputted to a vertical display 6 set by turning a lateral elongated display through 90 degrees and the image of the image feeding unit 1 may be displayed on the vertical display 6 in real time.

Also, a display apparatus is characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section and making it possible for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display 6 in real time, and an output section 5 for outputting a sequential scanning type image signal turned through 90 degrees in real time, wherein the image of the image feeding unit 1 turned through 90 degrees may be fed and displayed in real time on the vertical display 6 which is set in the vertical direction by turning a laterally elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section 4 are always once written in an image memory, this image memory is renewed in real time, and the turning image data readout from this image memory is outputted to said vertical display 6 so that the data may be fed and displayed in real time on the vertical display 6, further comprising an image data output section 10 in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area

may be displayed in a corresponding display area of said vertical display divided in a plurality of area in the same manner, and a renewal area switching section 6 structure to make it possible to change each area of said image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data or from the mode of stopping the renewal of the turning image data to the mode of renewing the data in real time, wherein the image signal turned through 90 degrees and outputted from said output section 5 is inputted to said vertical display 6 and the image of said image feeding unit 1 may be displayed on said vertical display 6 in real time.

Also, a display apparatus is characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a scanning type converting section 3 for converting into a sequential scanning type image signal a jump scanning type image signal inputted in real time from the input section or an image signal whose image has been turned through 90 degrees (including 270 degrees), a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 or the image signal converted into the sequential scanning type and for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display 6 in real time, and an output section 5 for outputting the sequential scanning type image signal turned through 90 degrees in real time, wherein the image of the image feeding unit 1 turned through 90 degrees may be fed and displayed in real time on the vertical display 6 which is set in the vertical direction by turning a laterally elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section 4 are always once written in an image memory, this image memory is renewed in real time, and the turning image data readout from this image memory is outputted to said vertical display 6 so that the data may be fed and displayed in real time on the vertical display 6, further comprising an image data output section 10 in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area may be displayed in a corresponding display area of said vertical display 6 divided in a plurality of area in the same manner, and a renewal area switching section structured to make it possible to change each area of said image memory

from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data or from the mode of stopping the renewal of the turning image data to the mode of renewing the data in real time, wherein the image signal turned through 90 degrees and outputted from said output section 5 is inputted to said vertical display 6 and the image of said image feeding unit 1 may be displayed on said vertical display 6 in real time.

Also, the display apparatus according to any one of claims 10 and 11 is characterized in that the turning image data to be renewed in real time in correspondence with the image signal to be inputted from the image feeding unit 1 are displayed as a normal image that may be displayed in motion picture in an image display area of said vertical display 6 corresponding to one area which is set so that the turning image data of said image memory are renewed, and turning image data renewed last in the turning image data renewed in real time are displayed as a stationary image are displayed in an image display area of said vertical display 6 corresponding to another predetermined area which is set so that the renewal of the turning image data is stopped.

Also, the display apparatus according to any one of claims 10 to 12 is characterized in that the overall image displayable range of the vertical display 6 may be essentially occupied by a plurality of divided image display areas.

Also, the display apparatus according to any one of claims 10 to 13 is characterized in that the overall image displayable range of the vertical display 6 is divided into image display area juxtaposed in a vertical direction.

Also, the display apparatus according to any one of claims 10 to 14 is characterized in that said renewal area switching section 11 is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in each divided area of the image memory.

Also, the display apparatus according to claim 15 is characterized in that said renewal area switching section 11 is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in the divided area of the image memory in accordance with a signal contained in the image signal or a situation of a picture image or a still image of the image signal outputted from the image feeding unit 1.

Also, a display apparatus is characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 and making it possible for turning the written image data through 90 degrees, an output section 5 for outputting the image signal to a laterally elongated display or a vertical display 6 set in a vertical direction by turning the laterally elongated display through 90 degrees, and an image cutout section 12 structured so that a predetermined portion written in the memory is read out, wherein a trimming image signal cut out with the predetermined portion of the image signal from said image feeding unit 1 is prepared and the trimming image signal may be outputted to the display from the output section 5, so that the image signal outputted from said image feeding unit 1 may be fed and displayed in real time as the trimming image signal turned through 90 degrees by the 90 degree image turning processing section 4 and the image cutout section 12.

Also, the display apparatus according to claim 17 is characterized in that said image cutout section 12 prepares the trimming image signal cut out longitudinally from a predetermined portion of an image signal outputted from the image feeding unit 1 and for making it possible to outputting the trimming image signal from the output section 5 to the laterally elongated display or the vertical display 6 set in the vertical direction by turning the laterally elongated display through 90 degrees.

Also, the display apparatus according to claim 17 is characterized in that said image cutout section 12 prepares the trimming image signal cut out from a middle portion of an image signal outputted from the image feeding unit 1 and for making it possible to outputting the trimming image signal from the output section 5 to the laterally elongated display or the vertical display 6 set in the vertical direction by turning the laterally elongated display through 90 degrees.

Also, the display apparatus according to any one of claims 17 to 19 is characterized in that said image cutout section 12 is set so that the trimming image signal cut out from the image signal outputted from the image feeding unit 1 may be enlarged and displayed to the laterally elongated display or the vertical display 6 set in the vertical direction by turning the

laterally elongated display through 90 degrees.

Also, the display apparatus according to any one of claims 17 to 20 is characterized in that said image cutout section is set so that a trimming image signal cut out longitudinally from a predetermined portion of the image signal outputted from the image feeding unit 1 may be enlarged and displayed so as to essentially occupy the overall image displayable range of the vertical display set 6 in the vertical direction by rotating the laterally elongated display through 90 degrees.

Also, the display apparatus according to any one of claims 1 to 3 and 7 to 21 is characterized by comprising a quantizing section 7 for quantizing the jump scanning signal from the image feeding unit 1 and inputted to the input section 2, the scanning type converting section 3 adapted to convert the quantized image signal to the sequential scanning type or the sequential scanning type after turning through 90 degrees, and an analog signal section 8 for making the image signal from said scanning type converting section 3 or the image signal from the 90 degree image processing section 4 analog signal so that the analog image signal is outputted from the output section.

Also, the display apparatus according to any one of claims 1 to 3 and 7 to 22 is characterized in that the 90 degree turning processing section 4 is adapted so that the jump scanning type image signal to be inputted in real time from the input section 2 or the image signal converted into the sequential scanning type by the scanning type converting section is written in the memory, and the written image data are read out from the address turned through 90 degrees (270 degrees) so that the image is turned through 90 degrees and may be fed and displayed on the vertical display 6 in real time.

Also, an advertising method using a display apparatus is characterized in that a display unit for turning through 90 degrees (including 270 degrees) an image by an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like is used, and the image signal turned through 90 degrees and outputted in real time from the display unit is fed and displayed to a thin vertical color display 6 that may be attached to a wall and is laterally elongated color display such as a plasma display or an LCD display to thereby perform a poster advertisement with the thin vertical color display 6 in which the image from the image feeding unit 1 is displayed in real

time.

Also, the advertising method using the display apparatus according to claim 24 is characterized in that a poster advertisement is performed by the thin vertical color display 6 in which the image from the image feeding unit 1 is displayed in real time by using the display apparatus according to any one of claims 1 to 3 and 7 to 23 as the display apparatus.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic illustrative block diagram of a first embodiment.

Fig. 2 is a schematic illustrative block diagram of a second embodiment (in case of analog synthesizing).

Fig. 3 is a schematic illustrative block diagram of a second embodiment (in case of digital synthesizing).

Fig. 4 is an illustrative perspective view showing the use condition of the second to fourth embodiments.

Fig. 5 is an illustrative frontal view of a vertical display showing the use condition of the second embodiment.

Fig. 6 is a schematic illustrative block diagram of a third embodiment.

Fig. 7 is a schematic illustrative block diagram of the third embodiment.

Fig. 8 is an illustrative frontal view showing an image display area of the vertical display of the third embodiment.

Fig. 9 is an illustrative frontal view of contents inputted into a display apparatus according to the third embodiment.

Fig. 10 is an illustrative frontal view of a display showing the use condition of the third embodiment.

Fig. 11 is an illustrative frontal view of contents inputted into the display apparatus according to the third embodiment.

Fig. 12 is an illustrative frontal view of the display showing the use condition of the third embodiment.

Fig. 13 is an illustrative frontal view of contents inputted into the display apparatus according to the third embodiment.

Fig. 14 is an illustrative frontal view of the display showing the use condition of the third embodiment.

Fig. 15 is a schematic illustrative block diagram of a fourth embodiment.

BEST MODE FOR EMBODYING THE INVENTION

A mode for embodying the present invention which may be considered as a best mode (how to embody the invention) will now be described in brief while showing its effective result with reference to the drawings.

An image signal of, for example, jump scanning type inputted into a display unit according to the invention is converted into an image signal of a sequential scanning type. The image is turned through 90 degrees (or is converted into an image signal of a sequential scanning type after the image has been turned through 90 degrees) and is outputted and displayed on a laterally elongated display or a vertical display 6 set up in a vertical manner while the above-described laterally elongated display has been turned through 90 degrees.

Namely, an image signal outputted from an image feeding unit 1 is turned in real time through 90 degrees (270 degrees) by the display unit, fed in real time to the above-described laterally elongated or vertical display 6 and displayed thereon.

Accordingly, for example, the conventional lateral elongated display is simply set in a vertical direction so that the vertical display 6 may be provided. The real time image signal of the jump scanning type simply outputted from the image feeding unit 1 without once storing and compiling the image source into software of a personal computer or the like into the vertical display 6 whose orientation has been thus changed is converted into, for example, the sequential scanning type by a hardware structure and turned through 90 degrees, outputted and fed to the vertical display 6 in real time to thereby display in a correct image orientation (Also, for example, image data or letter data are synthesized, fed and displayed by, for example, a personal computer or the like).

For this reason, for example, an advertising motion picture is displayed on the vertical display in real time, advertising image data or letter data produced by a personal computer or the like are synthesized or displayed in an extra portion on a lower portion or an upper portion so that the vertical advertising incorporating the real time image may be

realized and the poster advertisement may be performed by a clear motion picture.

Accordingly, for example, the thin plasma display is used and this is set in a vertical manner whereby it is possible to realize the poster advertisement in which various images may be simply switched over as desired at site. It is therefore possible to obtain the extremely excellent advertising effect that could not be attained at all by the laterally display by this poster advertisement.

Also, for example, the turning image data already subjected to the 90 degree turning process by a 90 degree image turning processing section 4 are always once written in an image memory, and the turning image data read out from this image memory are outputted to the above-described vertical display 6 while this image memory is renewed in real time so that the image data may be fed and displayed in real time on the vertical display 6. At the same time, there are provided an image data output section 10 that is structured so that it divides an area of the above-described image memory into a plurality of areas and may display the turning image data, written in each divided area, on a corresponding image display area, divided into a plurality of areas in the same manner, of the above-described vertical display 6 and a renewal area switching section 11 that is structured so that it may renew each area of the above-described image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal or from the mode of stopping the renewal of the turning image data to the mode of renewing in real time. The 90 degree turning image signal outputted from the above-described output section 5 is inputted into the above-described vertical display 6 and the image of the image feeding unit 1 may be displayed on the above-described vertical display 6 in real time. For example, the area of the above-described image memory corresponding to a blank space generated in a lower portion or an upper portion of the above-described motion image for advertisement is renewed into the mode of renewing the turning image data in real time and at the same time, the area which has displayed the image signal fed and displayed in real time is renewed into the mode of stopping the renewal of the area whereby the above-described image signal inputted in real time is fed and displayed in a portion which has been the above-described blank space. One site, which has been renewed last, of the above-described image signal inputted in real time may be displayed as a stationary image in a portion where the image has been displayed.

Namely, it is unnecessary to separately input the image produced by using a personal computer or the like as described above. It is therefore unnecessary to modify this image or to connect and operate the personal computer. Since the blank space may be filled with image extremely easily by using a single image source by one switching operation of the above-described renewal area switching section 11, the system is extremely easy to handle and is less expensive.

Also, for example, the image from the image feeding unit 1 for essentially occupying the entire image displayable area of the vertical display 6 is adapted to be able to be displayed on the vertical display. It is possible to display the above-described motion image for advertisement without any blank space in the image field of the above-described vertical display 6 only by inputting the image signal for the above-described vertical display without any needs to display the image, worked by a personal computer or the like as in the conventional manner, on the blank space.

Namely, since it is unnecessary to separately input the image produced by thus using the personal computer or the like, it is unnecessary to work this image or to connect and operate the personal computer and it is possible to fill the above-described blank space with the image extremely easily by one image source, which is extremely easy to handle and costless.

Furthermore, for example, the turning image data are displayed as a regular image (motion image) that may display the turning image data renewed in real time in correspondence with the image signal inputted in real time from the image feeding unit 1 on one hand, without simply displaying the same image on one image display area of the image display area of the vertical display 6 and the other predetermined image display area and the turning image data renewed last in the turning image data renewed in real time are displayed as a stationary image (still image) on the other hand. In the image where the motion image for propaganda of introducing a commercial product and a still image where a letter telop such as a company name, a product name and the like used in a general TV commercial film are displayed in order, it is possible to store (freeze) in the blank space the letter telop which should run inherently due to the start of the motion picture. It is possible to constitute the innovative advertisement image which may be displayed on the vertical

display together with the motion image.

Also, for example, in practicing of golf swing, practicing of dance or the like, there are cases where motions of a body in practicing are taken and thereafter the motions are confirmed by himself or herself. In the case where the human body image is taken by a video camera, an aspect ratio, i.e., a ratio of longitudinal length to lateral length of the regular laterally elongated display is 3:4 or 9:16. In order to take the entire body image by a regular video camera, the image is picked up from a distant position to some extent. It is impossible to display the entire human body image of a specified person while effectively utilizing the image displayable range of the above-described lateral elongated display.

Therefore, in the above-described case, conventionally, the above-described camera is turned through 90 degrees and the entire human body image is taken. This image is naturally displayed and turned through 90 degrees when the image is displayed on the laterally elongated display. The image is not displayed in the correct orientation of the image field. In order to watch the image well on a home TV, it is necessary to watch the image while turning the orientation of the above-described TV in a vertical direction.

However, it is necessary to turn the TV through 90 degrees at home whenever the taken image is to be watched, which is troublesome inevitably.

In this point, according to the present invention, even in the case where the orientation of the video camera is turned through 90 degrees for the vertical image so that the image turned through 90 degree is to be outputted, it is possible to display turn this image, turned through 90 degrees, by 270 degrees on an enlarged scale, for example. Accordingly, it is possible to display the image in the correct orientation also on the laterally elongated display. It is unnecessary to turn the home TV and it is possible to enjoy the image taken while the above-described camera is turned.

Also, for example, there is provided an image cutout section 12 structured so that the image signal from the above-described image feeding unit 1 is written in the memory, a predetermined portion written in the above-described memory is read out before the 90 degree turning process of the written image data (possibly after the 90 degree turning process) to thereby produce a trimming image signal that is cut out from the predetermined portion of the above-described image signal, and this trimming image signal may be

outputted from the output section 5 to the above-described display whereby it is possible to display the trimming image, obtained by removing an unnecessary image from the above-described image signal and rectified in scheme, on the above-described vertical display 6.

Therefore, as described above, since the regular video camera is used for the laterally elongated display, in order to take the entire body image of a person who is the vertical image, due to the aspect ratio of the above-described laterally elongated display, it is necessary to take the image from a distant position to some extent. In the case where the entire body image of the specified person is to be taken, even if the image other than him or her is unnecessary, the image other than the specified person, i.e., the object located on the right and left directions of the specified person is picked up together because of the laterally elongated field so that there is a fear that the image (point) which should be most stressed would become vague. However, it is possible to output the trimming image signal obtained by removing the unnecessary portion out of this image and rectified in scheme to the above-described display. Namely, it is possible to display on the above-described display only the really necessary image out of the above-described image signal.

Furthermore, for example, the above-described image cutout section 12 is set up so that a predetermined portion of the image signal of the laterally elongated display outputted from the above-described image feeding unit 1 is enlarged and displayed on the above-described display by preparing the trimming image signal cut out in a vertical direction. Thus, it is possible to enlarge and display on the image field of the vertical display 6 the vertical trimming image signal from which the unnecessary image is removed. It is possible to display the vertical image such as the entire body image of the person much more clearly than ever.

Furthermore, for example, the above-described image cutout section 12 is set up so that the trimming image signal by cutting out a middle portion of the above-described image signal is enlarged and displayed on the above-described display. Therefore, it is possible to always enlarge and display on the vertical display 6 the middle portion of the above-described image signal where in general the most important image is displayed. It is possible to constitute the innovative image whose point is more clarified.

Accordingly, in the case where the entire body image of the specified person is particularly important as in practicing of golf swing or dance as described above, it is possible to enlarge and display only the specified person on the overall image field of the vertical display 6. It is possible to realize the innovative image that has not been realized in spite of the strong demand. Not only does this image exhibit a remarkable advertisement effect as an advertisement image but also it is possible to further enhance the value of an amusement image, for example.

Consequently, according to the present invention, for example, the laterally elongated plasma display which is large in size and thin and displays an image clearly is set up with its orientation being changed in the vertical direction so that the vertical display may readily be realized. The image signal from the image feeding unit is subjected to the 90 degree turning process in real time and outputted to the vertical display in an easy and stable method, and the image data subjected to the 90 degree process are displayed on the above-described vertical display. Accordingly, it is possible to readily realize the advertisement medium which exhibits the advertisement effect that has not been realized by the laterally elongated image field (laterally elongated display) at all, i.e., the excellent catch eye effect due to the poster advertisement effect because of the vertical display. Accordingly, in synergy with the eye catching effect exhibited by the vertical display, it is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an extremely innovative, practical display apparatus, a display method and an advertising method using the display apparatus and the display method, in which the excellent advertising effect may be expected as a poster advertisement.

Specific embodiments of the present invention will now be described with reference to the drawings.

In a first embodiment, a jump scanning type analog video signal inputted is quantized and decoded by a decoder circuit, the quantized image data are converted into a sequential scanning type by a sequential scanning type circuit, and the image is written into a memory on the basis of an address produced by an address generating circuit and is read

out on the address on the basis of the address turned through 90 degrees and formed into an analog signal by an D/A converter so that the image is turned, fed and displayed on the display in real time.

More specifically, as shown in Fig. 1, the system is composed of a decoder circuit 22 for decoding an inputted jump scanning type analogue video signal 21, a sequential scanning type circuit 23 for converting the decoded jump scanning type analogue video signal 21 into the scanning type in order, a memory 24 for storing as image data the jump scanning type analogue video signal 21 converted into the sequential scanning type, an address generating circuit 26 for writing the image data to a memory writing address 28 that is a designated address of the memory 24 and for reading out from a memory readout address 29 that is a designated address, and a D/A converter 25 for converting the read image data into an analog signal whereby the image data are turned through 90 degrees when the data are read out from the memory 24 and this turning image output 27 may be displayed on the display such as a display in real time.

Accordingly, any software is not used and the image may be turned only by the hardware. Therefore, without modifying a generally running image such as an on-air image or a video tape, the image replayed by the image replay unit is turned through 90 degrees in real time to thereby make it possible to use commercially the image with high image quality or to use the image for delivery of information.

Subsequently, a second embodiment will be described.

A display apparatus according to the second embodiment is adapted for outputting an image signal outputted from an image feeding unit 1 such as TV broadcasting, VTRs, cameras, personal computers or the like to a laterally elongated display by turning 90 degrees (270 degrees) or to a vertical display 6 which is set in a vertical direction by turning a laterally elongated display through 90 degrees.

More specifically, in the display apparatus according to the second embodiment, a jump scanning type image signal outputted from the image feeding unit 1 such as TV broadcasting, VTRs, cameras, personal computers or the like is converted into a sequential scanning type, the image signal that has been converted into the sequential scanning type is rotated through 90 degrees (270 degrees), and the above-described turning image signal is

synthesized on the image signal of the sequential scanning type to be separately inputted and is outputted. Letter information produced by a personal computer or the like is inputted as the sequential scanning type image to be separately inputted.

Since the real time property of the image to be separately inputted is not important, the turn of the image is performed by a method of using a conventionally available software.

The image turn is performed by the hardware on the jump scanning side to be inputted in real time as described above and the real time property is not degraded.

Namely, the second embodiment is structured as follows. In order to display the NTSC TV image on an image signal receiver (vertical display 6 as shown in Fig. 4) set by turning through 90 degree to have a vertical image field like, for example, a poster, the second embodiment is directed to the display apparatus for turning the NTSC TV image through 90 degrees in real time but is not to rotate the image by using the software like the conventional manner. Only the hardware is used and the image is turned in real time. For example, the analogue image signal of the jump scanning type inputted from an input section 2 is converted into the sequential scanning type in a scanning type converting section 3 composed of a sequential scanning circuit. The image is written in the memory, the written image data are read out in terms of address turned through 90 degrees, and a 90 degree image turning processing section 4 is constructed so as to rotate the image. The image of the sequential scanning type turned through 90 degrees is outputted from the output section 5 to the vertical display 6.

The display apparatus according to the second embodiment and a poster advertisement method using this display apparatus will now be described more specifically.

More specifically, as shown in Fig. 2, the display apparatus according to the second embodiment is composed of an input section 2 connected to an output terminal of the image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera, a personal computer or the like for inputting an image signal of jump scanning type to be outputted from this image feeding unit 1 in real time, a quantizing section 7 composed of a decoder circuit for quantizing the image signal of jump scanning type to be inputted from the input section 2 in real time, a scanning type converting section 3 composed of a sequential scanning circuit for converting the quantized image signal into the sequential scanning type image signal, a 90 degree image

turning processing section 4 for turning the image by the image signal converted into the sequential scanning type in real time through 90 degrees (including 270 degrees), an analogue signal section 8 composed of a D/A converter for making the image signal, turned through 90 degrees, an analogue signal, an image synthesizing section 9 for synthesizing with an image signal composed of the sequential scanning type image, image data, letter data produced by the personal computer and an output section 5 for outputting the image (picture) synthesized by this image synthesizing section 9. This output section 5 is connected to an input terminal of the vertical display 6 set by changing the orientation of the laterally elongated signal receiver (laterally elongated display) through 90 degrees to thereby feed out and display the synthesized image including the real time image.

Also, in the second embodiment, as described above, there is provided an image synthesizing section 9 for synthesizing the sequential scanning type image signal, turned through 90 degrees by the scanning type converting section 3 and the 90 degree image turning processing section 4, with the blank display data such as the sequential scanning type image signal, image data, letter data or the like which have been produced by a computer in advance. The synthesized data signal including the image signal displayed in real time from the image synthesizing section 9 is outputted from the above-described output section 5.

Namely, only the image signal turned through 90 degrees by the 90 degree image turning processing section 4 is not outputted but the synthesized data are produced to the image signal, the image data, the letter data with the sequential scanning signal by the personal computer and are synthesized with the image signal to be inputted in real time in the image synthesizing section 9 so that the advertisement information may be simultaneously displayed also in the blank of the real time image under the control of the personal computer.

In the case where the motion picture is also entrained in separate advertisement information to be outputted by the personal computer, it is also possible to turn and entrain the 90 degree turning image by the software or to compile the image data or the letter data or to display different data depending upon time.

Also, in case of synthesizing analogue data, the image synthesizing section 9 is

provided after the analogue signal section 8. In case of digital synthesizing, the synthesized data by the above-described sequential scanning signal separately synthesized as shown in Fig. 3 are quantized in a quantizing section 7 and synthesized in image in an image synthesizing section 9. An analog signal section 8 is provided after the analog signal section 8 so that the image is outputted from the output section 5.

Also, in the second embodiment, the image signal turned through 90 degrees and outputted in real time from such a display apparatus is fed and displayed in real time on the thin vertical plasma display set in a vertical direction by turning a wall hung thin horizontal color display (plasma display used in this case) through 90 degrees so that the poster advertisement is achieved by the vertical plasma display where the image from the image feeding unit 1 is displayed in real time.

Incidentally, the jump scanning method means a method in which the transfer amount may be reduced to half. When a single image which is represented by 525 scanning lines is transferred by 60 frames per second, the transfer amount is increased. Accordingly, the one image is displayed by two frames. Namely, the odd number of the scanning lines from 1 to 525 is scanned for the first frame and the even number of the scanning lines from 2 to 524 is scanned for the next one frame. Accordingly, it appears that the motion picture of 60 frames per second is transferred to eyes due to a residual image phenomenon.

The sequential scanning method means a method in which the transfer amount is large but the flicker is negligible because the jump scanning is not conducted and all the 60 frames are transferred.

The sequential scanning circuit is adapted to convert the inputted jump scanning type image signal into the sequential scanning type.

Also, the 90 degree image turning processing section 4 is composed of a memory for quantizing and converting the inputted jump scanning type analog image signal into the sequential scanning type by the sequential scanning circuit and for storing as image data the jump scanning type image signal converted into the sequential scanning type and an address generating circuit for writing the image data into the memory write address that is the designated address of the memory and for reading out the image data from the memory readout address that is the designated address. When the image data are read out from the

memory, the image data are turned through 90 degrees, and this turning image output may be displayed on the vertical display 6 through the D/A converter (analog signal section 8) in real time.

The address generating circuit is adapted to produce the memory write address in writing and the memory read out address where the 90 degree turning image is located in reading out.

Therefore, in the second embodiment, the laterally elongated plasma display which is large in size, thin and clearly displays the image is set up by changing the orientation in the vertical direction so that the image signal from the image feeding unit 1 is subjected to the 90 degree turning process and outputted in real time to the vertical display and while this is renewed in real time, this is displayed on the above-described vertical display. Accordingly, it is possible to readily realize the advertisement display which exhibits the advertisement effect that has not been realized by the laterally elongated image field (laterally elongated display) at all, i.e., the excellent catch eye effect due to the poster advertisement effect because of the vertical display. In addition, it is possible to display the image signal from the various image feeding units 1 in real time to the vertical display 6 which is changed from the laterally elongated type to the vertical type in combination with other image data or letter data or the like. Therefore, it is possible to display as the poster advertisement the various images in real time onto the vertical display 6 and to expect the excellent advertisement effect by the poster advertisement.

For example, one example thereof will now be described. In the case of performing the poster advertisement in a travel agency shop, if an extremely less expensive Hawaii tour is to be advertised, a beautiful image (motion picture) of Hawaii is displayed in real time by a DVD (player), while selecting a DVD software, on a central portion or an upper portion of the vertical display 6 which is the laterally elongated plasma display and set up in the vertical direction like a vertical signboard. The image data of the image of the hotel or the letters representing the "extremely less expensive", and the advertisement phrase of the travel agency synthesized by the personal computer are synthesized and displayed with the motion picture. Also, in the case where other motion picture is to be entrained by another personal computer in addition to the real time image, the tour contents are always further changed

and displayed by the image field touch operation or the personal computer operation by the personal computer so that the innovative image signboard that exhibits the excellent poster advertisement may readily be realized (see Fig. 5).

In addition, since the motion picture is fed and displayed in real time, it is possible to change to a different DVD and to display. In some cases, it is possible to connect the system to the television receiver. Otherwise, if various image feeding units 1 are connected to a plurality of input terminals in advance, it is possible to perform the switch and display to the television broadcasting through the input switch by a simple operation at the shop.

Thus, it is usable to various advertisements. It is possible to readily switch the image contents of the real time images as desired depending upon the will of the user. It is possible to use the television broadcasting on air as the poster advertisement, which has not been conventionally attained.

Thus, if a plurality of DVDs, VTRs, cameras and the like are prepared (to be connected to the input section 2) and may be operated while being switched over suitably, and a number of pieces of DVD or VTR software are prepared, respectively, it is possible to increase the variation to the limitless manner.

Also, it is possible to set and display other advertisement information by the preparation and switching operation of the personal computers as desired. Since it is easy to erase, enlarge, contract or shift the real time image, it is possible to change various advertisement images in response to the set site, time or needs of the user as desired.

A third embodiment will now be described.

In the third embodiment, like the second embodiment, the image signal for the laterally elongated display is turned through 90 degrees and inputted into the elongated display 6 which is changed in the orientation of the laterally elongated display so that the blank space generated in the upper portion and the lower portion of the image is filled. The work of separately inputting the image produced by the personal computer or the like as described above may be dispensed with and the system is much easier to handle.

Namely, the display apparatus according to the third embodiment is composed, as shown in Fig. 6, of an image data outputting section 10 in which a jump scanning type image signal of TV broadcasting, a VTR, a camera, a personal computer or the like is converted into

a sequential scanning type, and the image signal that has been converted into the sequential scanning type is turned through 90 degrees (270 degrees) (possible to convert the 90 degree turn image into the sequential scanning type after the turn), the turning image data read out from the image memory are outputted to the vertical display 6 while always once writing to the image memory the turning image data subjected to the 90 degree turning process and renewing in real time the image memory to make it possible to feed and display the image data in real time to the vertical display 6, and the turning image data where a area of the above-described image memory is divided into a plurality of areas and which is written in each divided area may be displayed in a corresponding image display area of the above-described vertical display 6 divided in a plurality of areas in the same manner, and a renewal area switching section 11 in which each of the above-described areas of the image memory may be changed from a mode of renewing the turning image data in real time to a mode of stopping the renewal in real time or from the mode of stopping the renewal to the mode of renewing the turning image data in real time to thereby make it possible to display the image on the above-described blank space without needs of the personal computer.

This image data output section 10 is structured to as to feed and display the turning image data written in real time in the above-described image memory on the above-described vertical display 6 in real time not for each area but together.

Namely, the above-described image data outputting section 10 is structured so that the turning image data to be renewed every time in response to the image signal to be inputted in real time from the image feeding unit 1 are displayed as a regular image (motion picture) which may be displayed as a picture image to the image display area of the above-described vertical display 6 corresponding to one area set to renew in real time the turning image data to be written in the above-described image memory, and the turning image data renewed last in the turning image data renewed in real time are displayed as a stationary image (still picture) to the image display area of the above-described display 6 corresponding to another predetermined area set to stop the renewal of the above described turning image data. Accordingly, the motion pictures or the stationary pictures are displayable in the image display area divided into a plurality of areas, respectively.

Also, the area of the image memory is divided into two so that the overall image

displayable range of the above-described vertical display 6 may display the image divided into the two image display areas having substantially the same area juxtaposed in the up-and-down direction. At the same time, the overall image displayable region may essentially occupy the two-divided image display region (see Fig. 8). Namely, the image to be displayed on this vertical display 6 is composed, in scheme, of the two images arranged in the vertical direction and displayed in the regular laterally elongated display. It is possible not only to display the images displayed in the laterally elongated display as they are without any abnormal feel but also to utilize the image displayable range of the above-described vertical display 6 without any dead space to thereby make it possible to further effectively utilize the large size display.

Incidentally, in the third embodiment, the two image display areas of the above-described display 6 are juxtaposed in the vertical direction. Three or four image display area or more may be juxtaposed together. In this case, it is possible to display a plurality of still pictures together with the motion picture on the above-described vertical display 6. Also, a plurality of pictures may be arranged in the right and left directions.

Also, the renewal area switching section 11 is set up so that the turning image data are written and renewed in real time in one area selected by the renewal area switching section 11 (possible to stop the renewal) and the renewal is stopped in another area.

Accordingly, in the third embodiment, the motion picture and the still picture are displayed in the image display region of the vertical display 6 by a single image source to be inputted (for example, real time NTSC image signal) to make it possible to display the advertisement image without any blank space.

Also, in the third embodiment, the above-described renewal area switching section 11 is set up so as to change a mode of whether or not the turning image data in one area of the image memory and the other area are automatically renewed. Accordingly, the position where the motion picture (still picture) is displayed is switched suitably in correspondence with the image to be displayed. An impression that has not been experienced is given to the observer so as to attract the attention so that the extremely innovative advertisement image may be provided.

More specifically, as shown in Fig. 6, the past image data are compared with the

current image data in, for example, one area (area A) where a mode of renewing the turning image data in real time is set. In the case where the condition that no change occurs in the image data is kept for a predetermined period of time, the renewal is stopped and the mode is set up to be changed by the motion picture/still picture detecting circuit 13 structured so that the mode of the other area (area B) may be changed to the mode of renewing in real time when the change of the image data is detected from the condition that no change occurs continuously for the predetermined period of time. Namely, normally, the letter telop or the like that will run in moving on a next scene may be stored (frozen) automatically in the blank space. It is possible to constitute the advertisement image that not only may effectively utilize the large image field but also may propagate more effectively by the still image such as the letter telop in synergy with the motion picture.

Incidentally, in the third embodiment, the renewal area switching section 11 is automatically switched over in correspondence with a situation of the motion picture and the still picture of the image signal to be outputted from the image feeding unit 1. However, as shown in Fig. 7, a control signal for operating the above-described renewal area switching section 11 is included in the image signal to be outputted from the above-described image feeding unit 1 so that the mode of setting whether or not the turning image data of one area of the image memory and the other area are renewed automatically when the control signal is inputted may be set to be switched over. In this case, the scene that is considered as the most effective one by the person who produces the image may be displayed intentionally together with the motion picture to thereby enhance the advertisement effect more effectively. Also, it is possible to set the system so that the renewal area switching section 11 may be operated manually as desired. It is possible to set the system so that the switching operation is performed every predetermined period of time (for example, every ten seconds) by a timer.

Also, when the switching operation of the area to be renewed by the above-described renewal area switching section 11 is performed, in this embodiment, one area is once switched to the other area, that is, the switching is performed so that the image display area where the motion picture or the still picture is to be displayed is switched to the upper portion or the lower portion. It is possible to set the system so that the switching is performed

plural times automatically when the switching is to be performed. For example, in the case where the switching is performed twice (even number of times) when the switching is to be performed, the image display areas of the vertical display 6 in which the motion picture or the still picture is displayed are not switched over and it is possible to always display the motion picture and the still picture, for example, in the upper portion and the lower portion, respectively. Also in case of audition near the vertical display 6, it is possible to constitute the advertisement image that may be subjected to the audition in a good condition. Furthermore, the switching is performed many times for a short period of times so that the image such as the motion picture may be displayed in the display areas on the upper and lower portions due to the residual image phenomenon.

Furthermore, the display apparatus according to the third embodiment and a poster advertisement method using this display apparatus will now be described in more detail.

The display apparatus according to the third embodiment is composed of an input section 2 connected to an output terminal of the image feeding unit 1 such as TV broadcasting, a VTR, a DVD, a camera or the like for inputting an image signal of jump scanning type to be outputted from this image feeding unit 1 in real time, a quantizing section 7 composed of a decoder circuit for quantizing the image signal of jump scanning type to be inputted from the input section 2 in real time, a scanning type converting section 3 composed of a sequential scanning circuit for converting the quantized image signal into the sequential scanning type image signal, a 90 degree image turning processing section 4 for turning the image by the image signal converted into the sequential scanning type in real time through 90 degrees (including 270 degrees), an image data outputting section 10 structured for always writing, in the image memory, the turning image data already subjected to the 90 degree turning process, renewing this image memory in real time, and outputting the turning image data read out from this image memory so as to be fed and displayed in real time on this vertical display 6 and structured so that an area of the above-described image memory is divided into a plurality of areas and the turning image data written in each divided area may be displayed in the image display area corresponding to the above-described vertical display 6 divided in a plurality of areas in the same manner, a renewal area switching section 11 structured so that each area of the above-described memory may be changed from a mode of renewing the

turning image data in real time to a mode of stopping the renewal or from the mode of stopping the renewal of the turning image data to the mode of renewing in real time, an analogue signal portion 8 composed of a D/A converter for making the image signal, turned through 90 degrees, an analogue signals, and an output section 5 for outputting the image signal to the vertical display 6. The output section 5 is connected to an input terminal of the vertical display 6 set by changing the orientation of the laterally elongated signal receiver (laterally elongated display) through 90 degrees to thereby feed out and display the real time image that has been turned through 90 degree.

Accordingly, in the third embodiment, the area of the above-described image memory is divided in correspondence with the divided image display areas of the above-described vertical display. The normal image that may display the motion picture to be renewed in real time may be displayed in, for example, one area of the above-described vertical display by the display area switching section structured to make it possible to change to the mode of renewing in real time the turning image data written in each of these areas or the mode of stopping the renewal. One scene out of the images to be renewed in real time may be displayed in another predetermined area, i.e., a blank space. The blank space which is conventionally filled by using a plurality of image sources by a personal computer may be effectively utilized by a single image source without using any personal computer. It is therefore extremely easy to hand the system in a less expensive manner. The excellent advertisement effect due to the poster advertisement may be expected.

For example, one example will be described. In the case where TV commercial film to be inputted in real time and composed of a still image of a letter telop representing a company name or a product name and a motion picture for advertisement or introduction of the commercial product is displayed for the poster advertisement on a vertical display 6 which is a laterally elongated plasma display according to the display apparatus of this embodiment and which is set like a vertical signboard, for example, when, first of all, such contents that letters shown in Fig. 9 are fed to run, the motion picture is displayed in the upper image display area in real time during the run of the contents. When the run stops and the still picture condition is kept for a predetermined period of time (for example one second) or more, the renewal is stopped in the area (area A) of the image memory for feeding

and displaying the image in the upper image display area of the vertical display 6 for displaying the still image. The still picture is displayed in this upper image display area (see Fig. 10).

Subsequently, when the contents such that the image shown in Fig. 11 fades in are fed and the motion picture is detected, the above-described turned image data are renewed in real time in the area (area B) of the image memory for feeding and displaying the image in the lower image display area opposite to the area where the above-described still picture is displayed. The motion picture is displayed in this area B. When the motion stops and the condition of the still picture is going on as in the above-described case, the renewal stops in this area B. The still picture is displayed in the lower image display area (see Fig. 12).

Furthermore, when the contents composed of motion pictures as shown in Fig. 13, the above-described turning image data are renewed in real time in the area A opposite to the area B where the motion picture is detected in the same manner and the above-described renewal stops. The motion picture is displayed in the upper image display area (see Fig. 14).

Namely, not only is it possible to display the TV image on air which could not be displayed conventionally on the vertical display 6 but also it is possible to display the motion image in the area opposite to the image display area where the still picture is displayed while storing (freezing) this still image on the upper portion or the lower portion of the vertical display 6, for example, whenever the still picture such as a letter telop is displayed. In the TV commercial film, the effect of the letter telop is further enhanced, and the extremely innovative and effective poster advertisement image that could not be attained by the conventional laterally elongated display may be displayed. It is possible to realize an innovative image signboard that may perform the excellent poster advertisement in an inexpensive manner and that is extremely easy to handle without needs of personal computers.

The other is the same as the second embodiment.

A fourth embodiment will now be described.

The fourth embodiment is a modification of the third embodiment and is directed in the same manner to the structure in which the image signal for the laterally elongated display is turned through 90 degrees and inputted into the vertical display 6 obtained by

changing the orientation of the laterally elongated display into the vertical direction so that the step of separately inputting the image produced by the personal computer or the like for filling the blank space generated in the upper portion or the lower portion of this image it omitted. The system is easier to handle.

Namely, as shown in Fig. 15, the display apparatus according to the fourth embodiment is composed of an input section 2 for inputting the image signal outputted in real time from the image feeding unit 1 such as TV broadcasting, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section 4 for writing to the memory the above-described image signal to be inputted in real time from this input section 2 and for making it possible to turn this written image data through 90 degrees, and an output section 5 for outputting the above-described image signal to the laterally elongated display or to the vertical display 6 which is set in the vertical direction by turning the laterally elongated display through 90 degrees. The apparatus is provided with an image cutout section 12 in which a predetermined portion of the image data written in the above-described memory is read out, wherein a trimming image signal cut out with a predetermined portion of the image signal from the above-described image feeding unit 1 is prepared, and this trimming image signal may be outputted from the above-described output section 5 to the above-described display. The apparatus is structure so that the image signal outputted from the above-described image feeding unit 1 is fed and displayed in real time as the trimming image signal turned through 90 degrees by the image cutout section 12 and the 90 degree image turning processing section 4.

In the fourth embodiment, the image cutout section 12 is provided in which the image from the above-described image feeding unit 1 is written in the above-described memory, and a predetermined potion is left and the other portion is to be removed out of the image data written in the memory whereby the image signal outputted from the image feeding unit 1 to the vertical display 6 may be fed and displayed to the vertical display 6 as the trimming image signal in which only the predetermined portion is left and the scheme is rectified.

The image cutout section 12 is set so that the above-described image signal is cut out in the vertical direction. More specifically, an aspect ratio of the normal image (ratio of the

vertical length to the horizontal length) is 3:4 or 9:16. On the basis of this image signal, the system is set so that the longitudinal image signal having the aspect ratio of 4:3 or 16:9 is cut out.

Incidentally, if the above-described image data are cut out longitudinally, any cutout method may be used. However, in the fourth embodiment, the lateral length is shortened without changing the longitudinal length of the above-described data so that the longitudinal image is obtained, and the system is set so that this longitudinal image signal is cut out.

Also, the image cutout section 12 is structured so that the longitudinal trimming image signal that has been cut out may be displayed on a large scale on the image field of the above-described vertical display 6. More specifically, the image signal may occupy essentially all the image displayable range of the above-described vertical display.

Accordingly, it is possible to display the image without generating any blank space in the above-described vertical display 6. It is unnecessary to synthesize the image data processed by using a plurality of image sources by a personal computer or the like with the above-described image signal as in conventional manner. It is possible to display the entire body image of the person on the overall image field of the vertical display 6 to constitute the innovative image that has never been attained.

Namely, for example, if the image cutout section 12 is set so that the image data in the designated area of the above-described memory are always left and the image data in the other area are removed and thereafter, the data are read out whereby the trimming image signal is fed and displayed to the above-described display 6, in general, the most important information is displayed in the middle of the image. However, in the case where the object which is the point is always displayed in the same position of the display, for example, in a fashion show, in the image where the important object (model in this case) is always displayed in the middle of the image field, the corresponding area is designated to the middle of the image so that it is possible to always enlarge and display on the above-described vertical display only the model that is the point while removing the unnecessary image such as audience or stage or the like to be displayed on both sides of the model.

Also, for example, this image cutout section 12 may be set so that the trimming image signal in which the designated person is searched, the person is always left and the

other portion is removed is fed and displayed onto the above-described vertical display 6. In this case, only the designated person is enlarged and displayed on the above-described display 6. For example, it is possible to set the system so that only a favorite TV star is always enlarged and displayed in the overall image field of the above-described vertical display 6.

The display apparatus according to the fourth embodiment and a poster advertisement method using this display apparatus will now be described more specifically.

The display apparatus according to the fourth embodiment is composed of an input section 2 connected to an output terminal of the image feeding unit 1 such as TV broadcasting, a VTR, a DVD, a camera or the like for inputting an image signal of jump scanning type to be outputted from this image feeding unit 1 in real time, a quantizing section 7 composed of a decoder circuit for quantizing the image signal of jump scanning type to be inputted from the input section 2 in real time, a scanning type converting section 3 composed of a sequential scanning circuit for converting the quantized image signal into the sequential scanning type image signal, an image cutout section 12 for writing to the memory as the image data the image signal converted into a sequential scanning type in real time and for removing the image data written in the other area while leaving the image data written in a predetermined area of this memory to thereby provide a trimming image signal cut out only with the predetermined portion of the image signal, a 90 degree image turning processing section 4 for turning the image of the trimming image signal converted into the sequential scanning type in real time through 90 degrees (including 270 degrees), an analogue signal section 8 composed of a D/A converter for making the trimming image signal, turned through 90 degrees, an analogue signal, and an output section 5 for outputting the above-described image signal to a laterally elongated display or a vertical display 6 set up in a vertical manner while the above-described laterally elongated display has been turned through 90 degrees. The above-described output section 5 is connected to an input terminal of the vertical display 6 set by changing the orientation of the laterally elongated signal receiver (laterally elongated display) through 90 degrees to thereby feed out and display the real time 90 turned trimming image.

Also, in the fourth embodiment, after the cutout of the above-described image signal

(trimming process) has been performed by the above-described image cutout section 7, the 90 degree turning process is performed by the above-described 90 degree image turning processing section 4. However, it is possible to perform the trimming process after the 90 degree turning process has been performed.

Accordingly, for example, in a fashion show, only the entire body image of the model (possible to display a real size image) may be displaced without any blank space to the above-described large-size vertical display 6 while removing an unnecessary image around the model. It is therefore possible to display the extremely innovative advertisement image that has never been attained and is extremely strongly impressive to the audience.

Accordingly, in the fourth embodiment, since no software is used and the image may be turned only by the hardware, the image replayed by the image replayer is turned through 90 degrees in real time without processing an image that is available on the market such as on-air image, a video tape or the like so that the image may be displayed on the vertical display 6 while the laterally elongated is kept in the vertical direction. The trimming image which is rectified in scheme may be enlarged and displayed, without using any software, also in a blank space generated in the upper portion or the lower portion of the image turned through 90 degrees.

Namely, the image constituted according to the fourth embodiment is used as the advertisement image for propagating to many people but also the image is highly valuable as an amusement image for personal use while the image is rectified as desired.

In addition, for example, in golf swing practice or the like, in the case where the image taken while a video camera is turned through 90 degrees for picking up the entire image of a person is to be watched at home, his or her entire body image is turned through 90 degree and displayed in the horizontal direction in a home TV (laterally elongated display). Unless the home display is turned through 90 degree, the image is hard to see. However, even for such an image, with the 90 degree turning process, it is possible to see the image displayed on the home TV well in the correct image field orientation without needs to turn the home TV. For example, a predetermined portion of the image data written in the memory is read out and, for example, out of the image signal from the image feeding unit, the trimming signal left only with the specified person is prepared to the above-described vertical

display so that it is possible to enjoy the image while the specified person is displayed on a large scale on the above-described large-size vertical display and the scheme of the image is rectified as desired. Furthermore, since only the important object out of the above-described image signal may be displayed without any blank space by using the overall display, in synergy with the catch eye effect that is exhibited because of the vertical display, it is possible to realize the innovative image, which has never been realized, with the hardware structure that is extremely easy and costless without processing the image by using the software with a personal computer or the like. For example, it is possible to provide an extremely innovative practical display apparatus and an advertisement method using the display apparatus by which an excellent advertisement effect may be expected as the poster advertisement.

The other is the same as the second embodiment.

Incidentally, in this embodiment, the case where the NTSC image signal is outputted particularly from the image feeding unit 1 has been described in detail. The above-described image feeding unit 1 according to this embodiment is not limited to an image feeding unit that may output the image signal in real time such as TV broadcasting, a DVD, a VTR, a camera or the like. The unit may include concept of a unit that may once entrain the image signal of a personal computer and feed the image entrained. Accordingly, in this embodiment, not only the NTSC image signal but also the image distributed through an internet (broad band) may be displayed on the above-described vertical display 6 irrespective of wireless or wired systems.

Also, the system is set so that the scanning method is changed within the image feeding unit 1 whereby it is possible to display the image on the vertical display 6 without needs of the above-described scanning type converting section 3 in the same manner as described above.

Also, in this embodiment, the case where the above-described image signal is turned through 90 degrees and displayed on the vertical display 6 which is set in particular by changing the orientation of the laterally elongated display into the vertical direction has been described in detail. However, it is possible to display the image on a laterally elongated display by turning the above-described image signal through 90 degree.

INDUSRIAL APPLICABILITY

With the structure according to the invention, it is possible to readily realize an advertising medium that exhibits an advertising effect that could not be attained at all by a laterally elongated image field (laterally elongated display), i.e., a remarkable eye catching effect caused by a poster advertising effect with a vertical display, in which an already present laterally elongated display, for example, a thin large-size laterally elongated plasma display which clearly displays image is set up while changing the orientation in a vertical manner to thereby readily realize the vertical display with ease, an image signal from an image feeding unit is subjected to a 90 degree turning process and outputted to the vertical display, and this 90 degree turning processed image data are displayed in real time on the above-described vertical display.

In addition, for example, in the case where an image picked up by turning a video camera through 90 degrees for taking the entire human body as in a golf swing practice is watched at home, since the entire human body is displayed in orientation horizontally while being turned through 90 degrees on a regular home TV (laterally elongated display), the image is very hard to watch unless the home display is turned through 90 degrees correspondingly. Even in case of such an image, it is possible to watch well the image while the image is displayed in a correct image orientation without rotating the home TV by performing the 90 degree turning process. For example, with such a system that a predetermined portion of the image data written in a memory is read out, such a trimming image signal that, for example, only a personal image is left out of the image signal from the image feeding unit is produced for the above-described vertical display. For example, the specified person is displayed on a large scale on the above-described large-size vertical display and it is therefore possible to enjoy the image while rectifying a scheme of the image as desired. Furthermore, of the above-described image signal, only the important object may be displayed without any extra space while using the entire display. Accordingly, in synergy with the eye catching effect exhibited by software in a personal computer or the like, it is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an

extremely innovative, practical display apparatus, a display method and an advertising method using the display apparatus and the display method, in which the excellent advertising effect may be expected as a poster advertisement.

CLAIMS

1. A 90 degree turning display apparatus for an image signal characterized by comprising a sequential scanning circuit for signal-converting a jump scanning type image signal into a sequential scanning type and a signal turning unit for turning the signal through 90 degrees, wherein the image signal turned through 90 degrees may be fed in real time to a display.
2. The display apparatus according to claim 1, characterized by comprising a sequential scanning type circuit for converting the inputted jump scanning type image signal into a sequential scanning type, a memory for storing as image data the signal converted into the sequential scanning type, and an address generating circuit for writing the image data to a designated address of said memory and reading out the image data from the designated address, wherein the image data are turned through 90 degrees when reading out from said memory so that the image data may be displayed in real time on the display.
3. The display apparatus according to claim 2, characterized by comprising a decoder circuit for decoding an inputted jump scanning type analog video signal, a sequential scanning type circuit for converting the decoded jump scanning type analog video signal into a sequential scanning type, a memory for storing as the image data the jump scanning type analog video signal converted in the sequential scanning type, an address generating circuit for writing the image data to a designated address of said memory and reading out the image data from the designated address, and a D/A converter for making the read image data an analog signal, wherein the image data are turned through 90 degrees when reading out from said memory so that the image data may be displayed in real time on the display.
4. A 90 degree turning display method wherein a jump scanning type image signal is signal-converted into a sequential scanning type for turning the image signal through 90 degrees and the signal is turned through 90 degrees and fed and displayed in real time on a display.
5. The display method according to claim 4, wherein the inputted jump scanning type image signal is converted into the sequential scanning type by a sequential scanning type circuit, the image is written in a memory, and the written image data are read out by an address that has been turned through 90 degrees whereby the image is turned and fed and

displayed in real time on the display.

6. The display method according to claim 5, wherein an inputted jump scanning type analog video signal is quantized and decoded by a decoder circuit, the quantized image data are converted into a sequential scanning type by the sequential scanning type circuit, the image is written in the memory on the basis of the address produced in the address generating circuit, read out on the basis of the address turned through 90 degrees and formed into an analog signal by a D/A converter to thereby turn the image to be fed and displayed in real time on the display.

7. A display apparatus characterized by comprising an input section for inputting an image signal outputted in real time from an image feeding unit such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section for writing in a memory the image signal to be inputted in real time from the input section and making it possible for turning the written image data through 90 degrees, and an output section for outputting the image signal to a laterally elongated display or a vertical display set in a vertical direction by turning the laterally elongated display through 90 degrees, wherein the image signal outputted from the image feeding unit may be fed and displayed to the laterally elongated or vertical display in real time as the image signal turned through 90 degrees by said 90 degree image turning processing section.

8. A display apparatus characterized by comprising an input section for inputting a jump scanning type image signal outputted in real time from an image feeding unit such as a TV receiver, a VTR, a DVD, a camera or the like, a scanning type converting section for converting into a sequential scanning type image signal the jump scanning type image signal inputted in real time from the input section or an image signal whose image has been turned through 90 degrees (including 270 degrees), a 90 degree image turning processing section for turning through 90 degrees (including 270 degrees) the image of the image signal converted into the sequential scanning type in real time or the jump scanning type image signal inputted in real time from said input section, and an output section for outputting in real time the sequential scanning type image signal that has been turned through 90 degrees, wherein the image signal that has been turned through 90 degrees and outputted from the output section is inputted to a vertical display set by turning a lateral elongated display

through 90 degrees and the image of the image feeding unit may be displayed on the vertical display in real time.

9. A display apparatus characterized by comprising an input section for inputting a jump scanning type image signal outputted in real time from an image feeding unit such as a TV receiver, a VTR, a DVD, a camera or the like, a scanning type converting section for converting into a sequential scanning type image signal the jump scanning type image signal inputted in real time from the input section or an image signal whose image has been turned through 90 degrees (including 270 degrees), a 90 degree image turning processing section for turning through 90 degrees (including 270 degrees) the image of the image signal converted into the sequential scanning type in real time or the jump scanning type image signal inputted in real time from said input section, an output section for outputting in real time the sequential scanning type image signal that has been turned through 90 degrees, and an image synthesizing section for synthesizing the sequential scanning type image signal turned through 90 degrees by said scanning type converting section and said 90 degree image turning processing section and blank display data of a sequential scanning type image signal produced by a computer, image data, letter data or the like, wherein the synthesized data signal including the image signal represented in real time from the image synthesize section is outputted from said output section, the synthesized data signal including the image signal that has been turned through 90 degrees and outputted from the output section is inputted to a vertical display set by turning a lateral elongated display through 90 degrees and the image of the image feeding unit may be displayed on the vertical display in real time.

10. A display apparatus characterized by comprising an input section for inputting an image signal outputted in real time from an image feeding unit such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section for writing in a memory the image signal to be inputted in real time from the input section and making it possible for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display in real time, and an output section for outputting the sequential scanning type image signal turned through 90 degrees in real time, wherein the image of the image feeding unit turned through 90 degrees may be fed and displayed in real time on the vertical display which is set in the vertical direction by turning a laterally

elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section are always once written in an image memory, this image memory is renewed in real time, and the turning image data readout from this image memory is outputted to said vertical display so that the data may be fed and displayed in real time on the vertical display, further comprising an image data output section in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area may be displayed in a corresponding display area of said vertical display divided in a plurality of area in the same manner, and a renewal area switching section structured to make it possible to change each area of said image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data or from the mode of stopping the renewal of the turning image data to the mode of renewing the data in real time, wherein the image signal turned through 90 degrees and outputted from said output section is inputted to said vertical display and the image of said image feeding unit may be displayed on said vertical display in real time.

11. A display apparatus characterized by comprising an input section for inputting an image signal outputted in real time from an image feeding unit such as a TV receiver, a VTR, a DVD, a camera or the like, a scanning type converting section for converting into a sequential scanning type image signal a jump scanning type image signal inputted in real time from the input section or an image signal whose image has been turned through 90 degrees (including 270 degrees), a 90 degree image turning processing section for writing in a memory the image signal to be inputted in real time from the input section or the image signal converted into the sequential scanning type and for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display in real time, and an output section for outputting the sequential scanning type image signal turned through 90 degrees in real time, wherein the image of the image feeding unit turned through 90 degrees may be fed and displayed in real time on the vertical display which is set in the vertical direction by turning a laterally elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section are always once written in an image memory, this image memory

is renewed in real time, and the turning image data readout from this image memory is outputted to said vertical display so that the data may be fed and displayed in real time on the vertical display, further comprising an image data output section in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area may be displayed in a corresponding display area of said vertical display divided in a plurality of area in the same manner, and a renewal area switching section structured to make it possible to change each area of said image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data or from the mode of stopping the renewal of the turning image data to the mode of renewing the data in real time, wherein the image signal turned through 90 degrees and outputted from said output section is inputted to said vertical display and the image of said image feeding unit may be displayed on said vertical display in real time.

12. The display apparatus according to any one of claims 10 and 11, characterized in that the turning image data to be renewed in real time in correspondence with the image signal to be inputted from the image feeding unit are displayed as a normal image that may be displayed in motion picture in a image display area of said vertical display corresponding to one area which is set so that the turning image data of said image memory are renewed, and turning image data renewed last in the turning image data renewed in real time are displayed as a stationary image are displayed in an image display area of said vertical display corresponding to another predetermined area which is set so that the renewal of the turning image data is stopped.

13. The display apparatus according to any one of claims 10 to 12, characterized in that the overall image displayable range of the vertical display may be essentially occupied by a plurality of divided image display areas.

14. The display apparatus according to any one of claims 10 to 13, characterized in that the overall image displayable range of the vertical display is divided into image display area juxtaposed in a vertical direction.

15. The display apparatus according to any one of claims 10 to 14, characterized in that said renewal area switching section is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in each divided area of the

image memory.

16. The display apparatus according to claim 15, characterized in that said renewal area switching section is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in the divided area of the image memory in accordance with a signal contained in the image signal or a situation of a picture image or a still image of the image signal outputted from the image feeding unit.

17. A display apparatus characterized by comprising an input section for inputting an image signal outputted in real time from an image feeding unit such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section for writing in a memory the image signal to be inputted in real time from the input section and making it possible for turning the written image data through 90 degrees, an output section for outputting the image signal to a laterally elongated display or a vertical display set in a vertical direction by turning the laterally elongated display through 90 degrees, and an image cutout section structured so that a predetermined portion written in the memory is read out, wherein a trimming image signal cut out with the predetermined portion of the image signal from the image feeding unit is prepared and the trimming image signal may be outputted to the display from the output section, so that the image signal outputted from said image feeding unit may be fed and displayed in real time as the trimming image signal turned through 90 degrees by the 90 degree image turning processing section and the image cutout section.

18. The display apparatus according to claim 17, characterized in that said image cutout section prepares the trimming image signal cut out longitudinally from a predetermined portion of an image signal outputted from the image feeding unit and for making it possible to outputting the trimming image signal from the output section to the laterally elongated display or the vertical display set in the vertical direction by turning the laterally elongated display through 90 degrees.

19. The display apparatus according to claim 17, characterized in that said image cutout section prepares the trimming image signal cut out from a middle portion of an image signal outputted from the image feeding unit and for making it possible to outputting the trimming image signal from the output section to the laterally elongated display or the vertical display

set in the vertical direction by turning the laterally elongated display through 90 degrees.

20. The display apparatus according to any one of claims 17 to 19, characterized in that said image cutout section is set so that the trimming image signal cut out from the image signal outputted from the image feeding unit may be enlarged and displayed to the laterally elongated display or the vertical display set in the vertical direction by turning the laterally elongated display through 90 degrees.

21. The display apparatus according to any one of claims 17 to 20, characterized in that said image cutout section is set so that a trimming image signal cut out longitudinally from a predetermined portion of the image signal outputted from the image feeding unit may be enlarged and displayed so as to essentially occupy the overall image displayable range of the vertical display set in the vertical direction by rotating the laterally elongated display through 90 degrees.

22. The display apparatus according to any one of claims 1 to 3 and 7 to 21, characterized by comprising a quantizing section for quantizing the jump scanning signal from the image feeding unit and inputted to the input section, the scanning type converting section adapted to convert the quantized image signal to the sequential scanning type or the sequential scanning type after turning through 90 degrees, and an analog signal section for making the image signal from said scanning type converting section or the image signal from the 90 degree image processing section analog signal so that the analog image signal is outputted from the output section.

23. The display apparatus according to any one of claims 1 to 3 and 7 to 22, characterized in that the 90 degree turning processing section is adapted so that the jump scanning type image signal to be inputted in real time from the input section or the image signal converted into the sequential scanning type by the scanning type converting section is written in the memory, and the written image data are read out from the address turned through 90 degrees (270 degrees) so that the image is turned through 90 degrees and may be fed and displayed on the vertical display in real time.

24. An advertising method using a display apparatus characterized in that a display unit for turning through 90 degrees (including 270 degrees) an image by an image signal outputted in real time from an image feeding unit such as a TV receiver, a VTR, a DVD, a

camera or the like is used, and the image signal turned through 90 degrees and outputted in real time from the display unit is fed and displayed to a thin vertical color display that may be attached to a wall and is laterally elongated color display such as a plasma display or an LCD display to thereby perform a poster advertisement with the thin vertical color display in which the image from the image feeding unit is displayed in real time.

25. The advertising method using the display apparatus according to claim 24, characterized in that a poster advertisement is performed by the thin vertical color display in which the image from the image feeding unit is displayed in real time by using the display apparatus according to any one of claims 1 to 3 and 7 to 23 as the display apparatus.

ABSTRACT

The present invention provides a display apparatus and a display method and an advertisement method using the display apparatus which may realize an innovative image that has never been realized by a hardware structure that is extremely easy and costless and in which an excellent advertisement effect is expected as, for example, a poster advertisement.

It is composed of a sequential scanning circuit for signal converting a jump scanning type image signal into a sequential scanning type and a signal turning unit for turning the signal through 90 degrees to make it possible to feed the image signal turned through 90 degrees in real time.

DISPLAY APPARATUS, DISPLAY METHOD AND ADVERTIZING METHOD USING THE
DISPLAY APPARATUS

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates to a display apparatus, a display method and an advertising method using the display apparatus in which a laterally elongated display is changed in orientation in a vertical direction to be used as a vertical display and an image is displayed on this vertical display in real time from an image feeding unit.

BACKGROUND ART

A technical innovation of an image feeding unit such as a TV receiver, a VTR, a camera and the like is remarkable and in this connection, a technical innovation of a display is also remarkable to attain a day-by-day development.

In particular, recently, a plasma display has been developed and put into practice so that a clear image may be displayed on a thin large-size display. Although it is still expensive, the image display technology has been drastically developed.

It is possible to clearly display a large-field realistic image without taking a large space by hooking such a plasma display for example on a wall or embedding it in a wall. However, this has not yet attained a satisfactory effect as an effective advertising means.

Namely, such a trial that a letter is superimposed on an image field by synthesizing with letter broadcasting or letter data or a letter telop is displayed in a marginal portion of the image field so that an advertising sentence may be displayed while a motion commercial film is displayed clearly has been already attained. However, it is hard to obtain the satisfactory advertising effect.

Even if a large-size plasma display is set not only at home but also in a place where people gather together, for example, shops, air ports, streets or the like and a clear advertising image is displayed there, although a temporary attention may be attracted to a beautiful large-size image field of this image, it is impossible to attract the attention to the contents of the advertisement.

In view of such a situation, as a result of repeated review and studies, the applicant has found that its cause is largely due to the fact that the image is displayed on the laterally elongated display.

Namely, in the image display technology thus far proposed, a laterally elongated image such as cinema is regarded to be similar to a human view field, a clear image such as a photographic picture is realized as much as possible and efforts are made to a display method of a wide laterally elongated image field. As a result, almost all the up-to-date displays are of a laterally elongated display type.

Accordingly, it is safe to say that almost all plasma displays that is expensive but large in size and thin to make it possible to provide a realistic clear image are also of a laterally elongated display type.

However, even if such laterally elongated displays are used for advertisement, although they are beautiful, it is impossible to ensure the satisfactory advertising effect.

Namely, if the advertising image is displayed on a laterally elongated display, so far as it is not concerned with a very interesting advertisement away from the thus far established common concept (potential sense) to a person who watches the image, such recognition is only caused that it is simple television broadcasting or a VTR runs without any attention. Even if a special commercial image is displayed, such recognition that a simple television commercial film runs is formed and the advertisement effect exceeding the television broadcasting (television commercial film) will not be generated.

Therefore, the applicant who has found out a problem that even if the plasma display that is the highest in the up-to-date image display technology is used, it is impossible to expect the advertising effect for this reason conceived that the laterally elongated display was intentionally changed in orientation and the advertisement was displayed in the vertical display changed in orientation.

It was found that the method to display the advertisement on this vertical display was more effective than expected and it was the actual state that the applicant himself was surprised at its effect.

Namely, a so-called poster advertisement effect was exhibited and it was newly recognized how large the advertisement capability of the poster advertisement was.

Almost all the current advertisement poster is of a vertical type. For this potential recognition, the vertical advertisement image may catch eyes and may be recognized as advertisement and attractive.

Accordingly, if the advertisement is displayed in a vertical manner, even if it is a motion picture, the advertisement may catch eyes and the advertisement is attractive to such an extent that the advertisement remains in brains as the advertisement poster on which the advertisement image is displayed while it was not recognized as simple television broadcasting or television commercial. Due to the appeal of the beautifulness of the image and the motion picture, the advertising information is propagated instantaneously.

If the poster advertisement is performed with a thin plasma display, the advertisement effect is more excellent due to the mobility and the clear beautifulness because of its thinness.

However, an advertisement means is being already practiced in which, while an attention is paid to this poster advertisement effect, a compiled advertisement image produced by a personal computer on a vertical display which is the laterally elongated display put in a vertical manner, or otherwise, in order to synthesize and display a motion picture, an image signal of a DVD or a VTR is once stored in the personal computer, the image is turned through 90 degrees by a software of the personal computer, and even if the image is displayed on the vertical display which is the laterally elongated display turned in a vertical manner, by this 90 degree turning process, the image may be displayed in a correct direction in the same manner as the manner that the image is displayed in the laterally elongated display.

However, according to this method in which the image is once stored in the personal computer and is turned through 90 degree, it is impossible to display various images on the longitudinal display in real time or to select, switch and display the images as desired.

Namely, according to the method in which the turning process is performed by using a 90 degree turning software in the personal computer and this is compiled and displayed on the vertical display, as a result, it is possible to display the motion picture on the vertical display which is the laterally elongated display like a poster advertisement but it is always necessary to perform the storage process in advance, which is troublesome. (In addition, not only does it need the time or steps but also the clearness of the image is remarkably

deteriorated due to the process through the personal computer.)

Accordingly, conventionally, in order to use the vertical display while changing the orientation of the lateral elongated display and to display the image on the vertical display, it is necessary to perform the process in advance by the software. It is therefore impossible to perform the poster advertisement with the image in real time.

In other words, since the image is not displayed in real time, in order to switch this image to another image, for example, in the case the image of a DVD player or a VTR player is to be replayed and displayed, it is impossible to change the image to another image or video tape, to switch the program to TV broadcasting, to change broadcasting channels or to switch the image to a current camera image of a place where a camera is set only by exchanging pieces of DVD software. It is thus impossible to perform such switching operation at site as desired or to continuously display the image in real time.

On the other hand, basically, it is sufficient to prepare and obtain a number of vertical image sources. However, there are not many such image sources. Also, it is possible to produce the image while keeping the pickup camera is set in a vertical manner. However, this is also costly and hard to attain.

In contrast, almost all broadcasting image or conventional software for DVDs or VTRs is also of a laterally elongated display type.

In view of the foregoing difficulties, according to the present invention, it is possible to readily realize an advertising medium that exhibits an advertising effect that could not be attained at all by a laterally elongated image field (laterally elongated display), i.e., a remarkable eye catching effect caused by a poster advertising effect with a vertical display, in which an already present laterally elongated display, for example, a thin large-size laterally elongated plasma display which clearly displays image is set up while changing the orientation in a vertical manner to thereby readily realize the vertical display with ease, an image signal from an image feeding unit is subjected to a 90 degree turning process and outputted to the vertical display, and this is displayed in real time on the above-described vertical display.

~~In addition, for example, in the case where an image picked up by turning a video camera through 90 degrees for taking the entire human body as in a golf swing practice is~~

watched at home, since the entire human body is displayed in orientation horizontally while being turned through 90 degrees on a regular home TV (laterally elongated display), the image is very hard to watch unless the home display is turned through 90 degrees correspondingly. Even in case of such an image, it is possible to watch well the image while the image is displayed in a correct image orientation without rotating the home TV by performing the 90 degree turning process. For example, with such a system that a predetermined portion of the image data written in a memory is read out, such a trimming image signal that, for example, only a personal image is left out of the image signal from the image feeding unit is produced for the above-described vertical display. For example, the specified person is displayed on a large scale on the above-described large-size vertical display and it is therefore possible to enjoy the image while rectifying a scheme of the image as desired. Furthermore, of the above-described image signal, only the important object may be displayed without any extra space while using the entire display. Accordingly, in synergy with the eye catching effect exhibited by software in a personal computer or the like, it is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an extremely innovative, practical display apparatus, a display method and an advertising method using the display apparatus and the display method, in which the excellent advertising effect may be expected as a poster advertisement.

DISCLOSURE SUMMARY OF THE INVENTION

The essence of the present invention will now be described with reference to the accompanying drawings.

The invention relates According to an advertisement method comprising a first aspect of the steps of

setting a laterally elongated image signal receiver with its orientation present invention, there is provided a display apparatus characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing

section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 and making it possible for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display in real time, and an output section 5 for outputting a sequential scanning type image signal turned through 90 degrees, without keeping the receiver intact in a lateral direction, and installing the receiver in a commercial institution or a public space as an electronic signboard,

— using a 90 degree turning display unit for an image signal for turning an inputted jump scanning type image signal without using any software,

— feeding and displaying in real time the image, turned through 90 degrees, outputted in real time from the display unit and available generally on the market such as on-air image or a video tape, without processing the image, to the large size, thin type vertical color image signal receiver, as an electronic signboard, installed in a vertical direction so as to constitute a vertical image field like a poster, and

— performing advertisement by the large size, thin type vertical color image signal receiver for displaying the image turned through 90 degrees.

Also, it relates to the advertisement method according to claim 1, characterized by using the 90 degree turning display unit comprising:

— an input section connected to an output terminal to which a jump scanning type image signal is outputted for inputting a jump scanning type analog video signal 21 outputted from the output terminal in real time;

— a decoder circuit 22 for decoding in real time, wherein the image of the image feeding unit 1 turned through 90 degrees may be fed and displayed in real time on the vertical display 6 which is set in the vertical direction by turning a laterally elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section 4 are always once written in an image memory, the jump scanning type analog video signal 21 inputted;

— a sequential scanning type circuit 23 for signal converting the decoded jump scanning type digital video signal into a sequential scanning type;

— a signal turning unit for turning through 90 degrees the jump scanning type digital video signal converted into the sequential scanning type;

~~a D/A converter 25 for making the turned digital video signal an analog signal; and an output section connected to an input terminal of the laterally elongated image signal receiver for outputting in real time the analog video signal 21 turned through 90 degrees;~~

~~wherein the analog video signal 21 turned through 90 degrees and outputted image memory is renewed in real time, and the turning image data read out from the output section is inputted to the vertical image signal receiver set in the vertical direction by turning the laterally elongated image signal receiver, the 90 degree turning display unit of the image signal is formed so that the jump scanning type analog video signal 21 may be displayed on the vertical image signal receiver in real time and an image which has been turned through 90 degrees without using any software and without processing the image available generally on the market such as the on-air image or the video tape in real time in the vertical image signal receiver is displayed. image memory is outputted to said vertical display 6 so that the data may be fed and displayed in real time on the vertical display 6, further comprising an image data output section 10 in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area may be displayed in a corresponding display area of said vertical display 6 divided in a plurality of area in the same manner, and a renewal area switching section 11 structured to make it possible to change each area of said image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data or from the mode of stopping the renew of the turning image data to the mode of renewing the data in real time, wherein the image signal for advertisement turned through 90 degrees and outputted from said output section 5 is inputted to said vertical display 6 and the image of said image feeding unit 1 may be displayed on said vertical display 6 in real time and said renewal area switching section 11 is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in the divided area of the image memory in accordance with a signal contained in the image signal or a situation of a picture image or a still image of the image signal outputted from the image feeding unit 1.~~

In the display apparatus according to the first aspect of the invention, turning image data to be renewed in real time in response to the image signal to be inputted in real time

from the image feeding unit 1 are displayed as a normal image that may represent a motion picture to the image display area of said vertical display 6 corresponding to one area that is set to renew in real time the turning image data of said image memory, and the turning image data, renewed last, of the turning image data renewed in real time are displayed as a fixed image to said vertical display 6 corresponding to other predetermined area that is set to stop the renewal of said turning image data whereby the fixed image and the normal image of the image signal from the image feeding unit 1 may be displayed to said vertical display 6.

Also, it relates to a 90 degree turning apparatus for an image signal characterized by comprising:

an input section connected to an output terminal to which a jump scanning type image signal is outputted for inputting a jump scanning type analog video signal 21 outputted from the output terminal in real time;

a decoder circuit 22 for decoding the jump scanning type analog video signal inputted;

a sequential scanning type circuit 23 for signal converting the decoded jump scanning type digital video signal into a sequential scanning type;

a signal turning unit for turning through 90 degrees the jump scanning type digital video signal converted into the sequential scanning type;

a D/A converter 25 for making the turned digital video signal an analog signal; and

an output section connected to an input terminal of the laterally elongated image signal receiver for outputting in real time the analog video signal 21 turned through 90 degrees;

wherein the analog video signal 21 turned through 90 degrees and outputted from the output section is inputted to the large size and thin type vertical color image signal receiver set in the vertical direction by turning the laterally elongated image signal receiver through 90 degrees so as to constitute a vertical image field like a poster, the 90 degree turning display unit of the image signal is formed so that the jump scanning type analog video signal 21 may be displayed on the large size and thin type vertical color image signal receiver in real time and an image which has been turned through 90 degrees without using any software and without processing the image available generally on the market such as the

~~on-air image or the video tape in real time in the vertical image receiver is displayed.~~

~~Also, it relates to an advertisement method characterized by comprising:~~

~~using a display unit for outputting a synthesized data signal obtained by synthesizing a sequential scanning type image signal obtained by turning through 90 degrees (including 270 degrees) an image of an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like and blank display data for advertisement such as letter data, image data, a sequential scanning type image signal produced by a computer or the like;~~

~~feeding and displaying the synthesized data signal for advertisement including the image signal turned through 90 degrees and outputted in real time from said display unit to a thin type vertical color display 6 installed in a vertical direction in such a manner that a thin type laterally elongated color display that is attachable to a wall such as a plasma display or an LCD display is turned through 90 degrees to have a vertical view field like a poster without being set in a lateral direction; and~~

~~advertising by said thin type vertical color display 6 displaying the image from the image feeding unit 1 in real time.~~

~~Also, it relates to the advertisement method according to claim 4, characterized in that said display unit is structured so that the blank display data for advertisement are displayed in a juxtaposed manner with the image signal outputted in real time in an upper portion or a lower portion of the image of the image signal outputted in real time.~~

~~Also, it relates to the advertisement method according to any one of claims 4 and 5, characterized in that said display unit is structured so that the image signal outputted in real time and the blank display data for advertisement are displayed on the overall vertical image field of said thin type vertical color display 6.~~

~~Also, it relates to the advertisement method according to any one of claims 4 to 6, characterized in that a motion picture for advertisement is adopted in relation with the advertisement by the blank display data for advertisement such as letter data, image data, a sequential scanning type image signal produced by the computer or the like as the image signal outputted in real time, and the display unit is structured so that the synthesized data signal for advertisement obtained by synthesizing the blank display data for advertisement~~

~~and the motion picture for advertisement is fed and displayed in real time to the thin type vertical color display 6.~~

~~It relates to the advertisement method according to any one of claims 4 to 7, characterized by using a display unit comprising:~~

~~an input section 2 connected to an output terminal of an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like for inputting a jump scanning image signal outputted in real time from the image feeding unit 1;~~

~~a quantizing section 7 composed of a decoder circuit for quantizing the jump scanning type image signal inputted in real time from the input section 2;~~

~~a scanning type converting section 3 composed of sequential scanning type circuit for converting the quantized jump scanning type image signal into a sequential scanning type image signal~~

~~a 90 degree image turning processing section 4 for turning through 90 degrees (including 270 degrees) the image of the image signal converted into the sequential scanning type in real time;~~

~~an analog signal section 8 composed of a D/A converter for making the image signal, which has been turned through 90 degrees, an analog signal;~~

~~an image synthesizing section 9 for synthesizing the real time sequential scanning type image signal for converted into the analog signal and the image signal for advertisement composed of letter data, image data and a sequential scanning type image produced by a computer; and~~

~~an output section 5 for outputting the image signal synthesized by the image synthesizing section 9;~~

~~wherein the output section is connected to an input terminal of a vertical display 6 installed by changing the orientation of a laterally elongated display through 90 degrees so as to feed and display the synthesized image for advertisement including the real time image.~~

~~Also, it relates to a display apparatus characterized by comprising:~~

~~an input section 2 connected to an output terminal of an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like for inputting a jump scanning image signal outputted in real time from the image feeding unit 1;~~

— a quantizing section 7 composed of a decoder circuit for quantizing the jump scanning type image signal inputted in real time from the input section;

— a scanning type converting section 3 composed of sequential scanning type circuit for converting the quantized jump scanning type image signal into a sequential scanning type image signal

— a 90 degree image turning processing section 4 for turning through 90 degrees (including 270 degrees) the image of the image signal converted into the sequential scanning type in real time;

— an analog signal section 8 composed of a D/A converter for making the image signal, which has been turned through 90 degrees, an analog signal;

— an image synthesizing section 9 for synthesizing the real time sequential scanning type image signal converted into the analog signal and the image signal for advertisement composed of letter data, image data and a sequential scanning type image produced by a computer; and

— an output section 5 for outputting the image signal synthesized by the image synthesizing section 9;

— wherein the output section 5 is connected to an input terminal of a vertical display 6 installed by changing the orientation of a laterally elongated display through 90 degrees so as to feed and display the synthesized image for advertisement including In the display apparatus according to the first aspect, the overall image displayable range of the large size vertical display 6 may be essentially occupied by a plurality of divided image display areas.

In the display apparatus according to the third aspect, the overall image displayable range of the vertical display 6 is divided into image display area juxtaposed in a vertical direction.

According to a fifth aspect of the invention, there is provided a display apparatus characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a scanning type converting section 3 for converting into a sequential scanning type image signal a jump scanning type image signal inputted in real time from the input section 2

or an image signal whose image has been turned through 90 degrees (including 270 degrees), a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 or the image signal converted into the sequential scanning type and for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display 6, and an output section 5 for outputting the sequential scanning type image signal turned through 90 degrees in real time, wherein the image of the image feeding unit 1 turned through 90 degrees may be fed and displayed in real time on the vertical display 6 which is set in the vertical direction by turning a laterally elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section 4 are always once written in an image memory, the image memory is renewed in real time, and the turning image data read out from the image memory is outputted to said vertical display 6 so that the data may be fed and displayed in real time on the vertical display 6, further comprising an image data output section 10 in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area may be displayed in a corresponding display area of said vertical display 6 divided in a plurality of area in the same manner, and a renewal area switching section 11 structured to make it possible to change each area of said image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data or from the mode of stopping the renewal of the turning image data to the mode of renewing the data in real time, wherein the image signal for advertisement turned through 90 degrees and outputted from said output section 5 is inputted to said vertical display 6 and the image of said image feeding unit 1 may be displayed on said vertical display 6 in real time and said renewal area switching section is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in the divided area of the image memory in accordance with a signal contained in the image signal or a situation of a picture image or a still image of the image signal outputted from the image feeding unit 1.

In the display apparatus according to the fifth aspect, turning image data to be renewed in real time in response to the image signal to be inputted in real time from the image feeding unit 1 are displayed as a normal image that may represent a motion picture to

the image display area of said vertical display 6 corresponding to one area that is set to renew in real time the turning image data of said image memory, and the turning image data, renewed last, of the turning image data renewed in real time are displayed as a fixed image to said vertical display 6 corresponding to other predetermined area that is set to stop the renewal of said turning image data whereby the fixed image and the normal image of the image signal from the image feeding unit 1 may be displayed to said vertical display 6.

In the display apparatus according to the fifth aspect, the overall image displayable range of the large size vertical display 6 may be essentially occupied by a plurality of divided image display areas.

In the display apparatus according to the real time image.

~~Also, it relates to a display apparatus characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 and making it possible for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display in real time, and an output section 5 for outputting the sequential scanning type image signal to a vertical display in real time, wherein the image of the image feeding unit 1 turned through 90 degrees may be fed and displayed in real time on the vertical display 6 which is set in the vertical direction by turning a laterally elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section 4 are always once written in an image memory, this image memory is renewed in real time, and the turning image data readout from this image memory is outputted to said vertical display 6 so that the data may be fed and displayed in real time on the vertical display 6, further comprising an image data output section 10 in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area may be displayed in a corresponding display area of said vertical display 6 divided in a plurality of area in the same manner, and a renewal area switching section 11 structured to make it possible to change each area of said image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data~~

~~or from the mode of stopping the renewal of the turning image data to the mode of renewing the data in real time, wherein the image signal for advertisement turned through 90 degrees and outputted from said output section 5 is inputted to said vertical display 6 and the image of said image feeding unit 1 may be displayed on said vertical display 6 in real time and the turning image data be written in the memory whose area is divided into a plurality of areas are the image signal from the single image feeding unit 1.~~

~~Also, it relates to a display apparatus characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a scanning type converting section 3 for converting into a sequential scanning type image signal a jump scanning type image signal inputted in real time from the input section or an image signal whose image has been turned through 90 degrees (including 270 degrees), a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 or the image signal converted into the sequential scanning type and for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display in real time, and an output section for outputting the sequential scanning type image signal turned through 90 degrees in real time, wherein the image of the image feeding unit 1 turned through 90 degrees may be fed and displayed in real time on the vertical display 6 which is set in the vertical direction by turning a laterally elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section 4 are always once written in an image memory, this image memory is renewed in real time, and the turning image data readout from this image memory is outputted to said vertical display 6 so that the data may be fed and displayed in real time on the vertical display, further comprising an image data output section 10 in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area may be displayed in a corresponding display area of said vertical display 6 divided in a plurality of area in the same manner, and a renewal area switching section 11 structured to make it possible to change each area of said image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data or from the mode of stopping the renewal of the turning~~

~~image data to the mode of renewing the data in real time, wherein the image signal for advertisement turned through 90 degrees and outputted from said output section 5 is inputted to said vertical display 6 and the image of said image feeding unit 1 may be displayed on said vertical display 6 in real time and the turning image data be written in the memory whose area is divided into a plurality of areas are the image signal from the single image feeding unit 1.~~

~~Also, it relates to the display apparatus according to any one of claims 10 and 11, characterized in that the turning image data to be renewed in real time in correspondence with the image signal to be inputted from the image feeding unit 1 are displayed as a normal image that may be displayed in motion picture in an image display area of said vertical display 6 corresponding to one area which is set so that the turning image data of said image memory are renewed, turning image data renewed last in the turning image data renewed in real time are displayed as a stationary image are displayed in an image display area of said vertical display 6 corresponding to another predetermined area which is set so that the renewal of the turning image data is stopped and a regular image of the image signal from the single image feeding unit 1 and the fixed image may be displayed on said vertical display 6.~~

~~Also, it relates to the display apparatus according to any one of claims 10 to 12, characterized in that the overall image displayable range of the large size vertical display 6 may be essentially occupied by a plurality of divided image display areas.~~

~~Also, the display apparatus according to any one of claims 10 to 13 is characterized in that seventh aspect, the overall image displayable range of the vertical display 6 is divided into image display area juxtaposed in a vertical direction.~~

~~Also, the display apparatus according to any one of claims 10 to 14 is characterized in that said renewal area switching section 11 is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in each divided area of the image memory.~~

~~Also, the display apparatus according to claim 15 is characterized in that said renewal area switching section 11 is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in the divided area of the image~~

~~memory in accordance with a signal contained in the image signal or a situation of a picture image or a still image of the image signal outputted from the image feeding unit 1.~~

Also, it relates to a display apparatus characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 and making it possible for turning the written image data through 90 degrees, an output section 5 for outputting the image signal to a laterally elongated display or a vertical display 6 set in a vertical direction 6 by turning the laterally elongated display through 90 degrees, and an image cutout section 12 structured so that a predetermined portion written in the memory is read out, wherein a trimming image signal cut out with the longitudinal predetermined portion of the image signal from said image feeding unit 1 is prepared and the trimming image signal may be outputted to the display from the output section 5, and the image cutout section is structured in such manner that in accordance with the trimming image signal cut out longitudinally, an object such as a person is displayed on an enlarged scale to said laterally elongated display or the vertical display 6 obtained by setting the laterally elongated display through 90 degrees in the vertical orientation while removing an unnecessary image, so that the image signal outputted from said image feeding unit 1 may be fed and displayed in real time as the trimming image signal turned through 90 degrees by the 90 degree image turning processing section 4 and the image cutout section 12.

Also, it relates to the display apparatus according to claim 17, characterized in that said image cutout section 12 prepares the trimming image signal cut out longitudinally from a predetermined portion of an image signal outputted from the image feeding unit 1 and for making it possible to outputting the trimming image signal from the output section to the laterally elongated display or the vertical display set in the vertical direction by turning the laterally elongated display through 90 degrees and the vertical object such as a person or the like may be displayed on an enlarged scale to the vertical display 6 while removing the unnecessary image.

Also, the display apparatus according to claim 17 is characterized in that said image cutout section 12 prepares the trimming image signal cut out from a middle portion of an

~~image signal outputted from the image feeding unit 1 and for making it possible to outputting the trimming image signal from the output section 5 to the laterally elongated display or the vertical display 6 set in the vertical direction by turning the laterally elongated display through 90 degrees.~~

~~Also, it relates to the display apparatus according to any one of claims 17 to 19, characterized in that said image cutout section 12 is set so that a portion of the trimming image signal, where the person is displayed, cut out from the image signal outputted from the image feeding unit 1 may be enlarged and displayed to the laterally elongated display or the vertical display 6 set in the vertical direction by turning the laterally elongated display through 90 degrees.~~

~~Also, it relates to the display apparatus according to any one of claims 17 to 20, characterized in that said image cutout section 12 is set so that a trimming image signal for advertisement cut out longitudinally from a predetermined portion of the image signal outputted from the image feeding unit 1 may be enlarged and displayed so as to essentially occupy the overall image displayable range of the large size vertical display 6 set in the vertical direction by rotating the laterally elongated display through 90 degrees.~~

~~Also, it relates to the display apparatus according to any one of claims 10 to 21, characterized by comprising a quantizing section 7 for quantizing the jump scanning signal from the image feeding unit 1 and inputted to the input section, the scanning type converting section 3 adapted to convert the quantized image signal to the sequential scanning type or the sequential scanning type after turning through 90 degrees, and an analog signal section 8 for making the image signal from said scanning type converting section 3 or the image signal from the 90 degree image processing section 4 analog signal so that the analog image signal is outputted from the output section.~~

~~Also, it relates to the display apparatus according to any one of claims 10 to 22, characterized in that the 90 degree turning processing section 4 is adapted so that the jump scanning type image signal to be inputted in real time from the input section 2 or the image signal converted into the sequential scanning type by the scanning type converting section is written in the memory, and the written image data are read out from the address turned through 90 degrees (270 degrees) so that the image is turned through 90 degrees and may be~~

~~fed and displayed on the vertical display 6 in real time.~~

~~Also, an advertising method using a display apparatus is characterized in that a display unit for turning through 90 degrees (including 270 degrees) an image by an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like is used, and the image signal turned through 90 degrees and outputted in real time from the display unit is fed and displayed to a thin vertical color display 6 that may be attached to a wall and is laterally elongated cover display such as a plasma display or an LCD display to thereby perform a poster advertisement with the thin vertical color display 6 in which the image from the image feeding unit 1 is displayed in real time.~~

~~Also, it relates to the advertising method using the display apparatus, characterized in that a poster advertisement is performed by the thin vertical color display 6 in which the image from the image feeding unit 1 is displayed in real time by using the display apparatus according to any one of claims 1 to 23 as the display apparatus..~~

~~Also it relate to an advertisement method characterized by using a display unit comprising:~~

~~outputting as an analog signal a synthesized data signal obtained by synthesizing a sequential scanning type image signal obtained by turning through 90 degrees (including 270 degrees) an image of an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like and blank display data for advertisement such as letter data, image data, a sequential scanning type image signal produced by a computer or the like;~~

~~preparing a plurality of image feeding units 1 and switching the real time image signals from the image feeding units 1 by a switching operation;~~

~~displaying the blank display data for advertisement in a juxtaposed manner with the image signal outputted in real time in an upper portion or a lower portion of the image of the image signal outputted in real time;~~

~~using a motion picture for advertisement adopted in relation with the advertisement by the blank display data as the image signal outputted in real time;~~

~~feeding and displaying the synthesized data signal for advertisement including the~~

~~image signal turned through 90 degrees and outputted in real time from said display unit to the thin type vertical color display 6 installed in a vertical direction in such a manner that a thin type laterally elongated color display 6 that is attachable to a wall such as a plasma display or an LCD display which is large in size and thin and which may display a clear image is turned through 90 degrees to have a vertical view field like a poster without being set in a lateral direction; and~~

~~advertising by said thin type vertical color display 6 displaying the image from the image feeding unit 1 in real time.~~

~~Also, it relates to the advertisement method according to claim 26, characterized by using a display unit comprising:~~

~~a plurality of input sections 2 connected to output terminals of a plurality of image feeding units 1 such as TV receivers, VTRs, DVDs, cameras or the like for inputting a jump scanning image signal outputted in real time from the image unit 1, respectively;~~

~~a quantizing section 7 composed of a decoder circuit for quantizing the jump scanning type image signals inputted in real time from the input sections 2;~~

~~a scanning type converting section 3 composed of a sequential scanning type circuit for converting the quantized jump scanning type image signal into a sequential scanning type image signal~~

~~a 90 degree image turning processing section 4 for turning through 90 degrees (including 270 degrees) the image of the image signal converted into the sequential scanning type in real time;~~

~~an analog signal section 8 composed of a D/A converter for making the image signal, which has been turned through 90 degrees, an analog signal;~~

~~an image synthesizing section 9 for synthesizing the real time sequential scanning type image signal converted into the analog signal and the image signal for advertisement composed of letter data, image data and a sequential scanning type image produced by a computer; and~~

~~an output section 5 for outputting the image signal synthesized by the image synthesizing section 9;~~

~~wherein the output section 5 is connected to an input terminal of a vertical display 6~~

~~installed by changing the orientation of a laterally elongated display through 90 degrees so as to feed and display the synthesized image for advertisement including the real time image.~~

~~Also, it relates to a display apparatus, characterized by comprising:~~

~~a plurality of input sections 2 connected to output terminals of a plurality of image feeding units 1 such as TV receivers, VTRs, DVDs, cameras or the like for inputting a jump scanning image signal outputted in real time from the image feeding unit 1, respectively;~~

~~— a quantizing section 7 composed of a decoder circuit for quantizing the jump scanning type image signal inputted in real time from the input section 2;~~

~~— a scanning type converting section 8 composed of sequential scanning type circuit for converting the quantized jump scanning type image signal into a sequential scanning type image signal~~

~~— a 90 degree image turning processing section 4 for turning through 90 degrees (including 270 degrees) the image of the image signal converted into the sequential scanning type in real time;~~

~~— an analog signal section 8 composed of a D/A converter for making the image signal, which has been turned through 90 degrees, an analog signal;~~

~~— an image synthesizing section 4 for synthesizing the real time sequential scanning type image signal converted into the analog signal and the analog image signal for advertisement composed of letter data, image data and a sequential scanning type image produced by a computer; and~~

~~— an output section 5 for outputting the image signal synthesized by the image synthesizing section 4;~~

~~wherein the output section 5 is connected to an input terminal of a vertical display 6 installed by changing the orientation of a laterally elongated display through 90 degrees so as to feed and display the synthesized image for advertisement including the real time image and the real time image signals from the plurality of image feeding units 1 connected to the plurality of input sections 2 may be switched over by a switching operation.~~

With the structure according to the invention, it is possible to readily realize an advertising medium that exhibits an advertising effect that could not be attained at all by a laterally elongated image field (laterally elongated display), i.e., a remarkable eye catching

effect caused by a poster advertising effect with a vertical display, in which an already present laterally elongated display, for example, a thin large-size laterally elongated plasma display which clearly displays image is set up while changing the orientation in a vertical manner to thereby readily realize the vertical display with ease, an image signal from an image feeding unit is subjected to a 90 degree turning process and outputted to the vertical display, and this 90 degree turning processed image data are displayed in real time on the above-described vertical display.

~~In addition, for example, in the case where an image picked up by turning a video camera through 90 degrees for taking the entire human body as in a golf swing practice is watched at home, since the entire human body is displayed in orientation horizontally while being turned through 90 degrees on a regular home TV (laterally elongated display), the image is very hard to watch unless the home display is turned through 90 degrees correspondingly. Even in case of such an image, it is possible to watch well the image while the image is displayed in a correct image orientation without rotating the home TV by performing the 90 degree turning process. For example, with such a system that a predetermined portion of the image data written in a memory is read out, such a trimming image signal that, for example, only a personal image is left out of the image signal from the image feeding unit is produced for the above-described vertical display. For example, the specified person is displayed on a large scale on the above-described large-size vertical display and it is therefore possible to enjoy the image while rectifying a scheme of the image as desired. Furthermore, of the above-described image signal, only the important object may be displayed without any extra space while using the entire display. Accordingly, in synergy with the eye catching effect exhibited by software in a personal computer or the like, it—~~ It is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an extremely innovative, practical display apparatus, a display method and an advertising method using the display apparatus and the display method, in which the excellent advertising effect may be expected as a poster advertisement.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic illustrative block diagram perspective view showing the use condition of a first embodiment.

Fig. 2 is a schematic illustrative block diagram of a second the embodiment (in case of analog synthesizing).

Fig. 3 is a schematic illustrative block diagram of a second the embodiment (in case of digital synthesizing).

Fig. 4 is an illustrative perspective frontal view showing the use condition an image display area of the second to fourth embodiments vertical display of the embodiment.

Fig. 5 is an illustrative frontal view of contents inputted into a vertical display showing apparatus according to the use condition of the second embodiment.

Fig. 6 is a schematic illustrative block diagram frontal view of a third display showing the use condition of the embodiment.

Fig. 7 is a schematic illustrative block diagram frontal view of contents inputted into the third display apparatus according to the embodiment.

Fig. 8 is an illustrative frontal view of the display showing an image display area of the vertical display the use condition of the third embodiment.

Fig. 9 is an illustrative frontal view of contents inputted into a the display apparatus according to the third embodiment.

Fig. 10 is an illustrative frontal view of a the display showing the use condition of the third embodiment.

Fig. 11 is an illustrative frontal view of contents inputted into the display apparatus according to the third embodiment.

Fig. 12 is an illustrative frontal view of the display showing the use condition of the third embodiment.

Fig. 13 is an illustrative frontal view of contents inputted into the display apparatus according to the third embodiment.

Fig. 14 is an illustrative frontal view of the display showing the use condition of the third embodiment.

Fig. 15 is a schematic illustrative block diagram of a fourth embodiment.

BEST MODE FOR EMBODYING THE INVENTION

DESCRIPTION OF PREFERRED EMBODIMENTS

A mode for embodying the present invention which may be considered as a best mode (how to embody the invention) will now be described in brief while showing its effective result with reference to the drawings.

An image signal of, for example, jump scanning type to be inputted into a to the display unit apparatus according to the present invention is converted into an image signal of a sequential scanning type. The image is turned through 90 degrees (or is converted into an image signal of a sequential scanning type after the image has been turned through 90 degrees) and is outputted and displayed on a laterally elongated display or a vertical display 6 set up in a vertical manner while installed longitudinally by turning the above-described laterally elongated display has been turned through 90 degrees by 90 degrees to be set in a vertical direction.

Namely, an image signal outputted from an image feeding unit 1 is turned in real time through 90 degrees (270 degrees) by the display unit, fed in real time to the above-described laterally elongated or vertical display 6 and displayed thereon.

Accordingly, for example, the conventional lateral elongated display is simply set in a vertical direction so that the vertical display 6 may be provided. The real time image signal of the jump scanning type simply outputted from the image feeding unit 1 without once storing and compiling the image source into software of a personal computer or the like into the vertical display 6 whose orientation has been thus changed is converted into, for example, the sequential scanning type by a hardware structure and turned through 90 degrees, outputted and fed to the vertical display 6 in real time to thereby make it possible to display in a correct image orientation (Also, for example, image data or letter data are synthesized, fed and displayed by, for example, a personal computer or the like).

For this reason, for example, an advertising motion picture is displayed on the vertical display in real time, advertising image data or letter data produced by a personal computer or the like are synthesized or displayed in an extra portion on a lower portion or an upper portion so that the vertical advertising incorporating the real time image may be

~~realized and the poster advertisement may be performed by a clear motion picture.~~

Accordingly, for example, the thin plasma display is used and this is set in a vertical manner whereby it is possible to realize the poster advertisement in which various images may be simply switched over as desired at site. It is therefore possible to obtain the extremely excellent advertising effect that could not be attained at all by the laterally display by this poster advertisement.

Also, ~~for example,~~ the turning image data already subjected to the 90 degree turning process by a 90 degree image turning processing section 4 are always once written in an image memory, and the turning image data read out from this image memory are outputted to the above-described vertical display 6 while this image memory is renewed in real time so that the image data may be fed and displayed in real time on the vertical display 6. At the same time, there are provided an image data output section 10 that is structured so that it divides an area of the above-described image memory into a plurality of areas and may display the turning image data, written in each divided area, on a corresponding image display area, divided into a plurality of areas in the same manner, of the above-described vertical display 6 and a renewal area switching section 11 that is structured so that it may renew each area of the above-described image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal or from the mode of stopping the renewal of the turning image data to the mode of renewing in real time. The 90 degree turning image signal outputted from the above-described output section 5 is inputted into the above-described vertical display 6 and may be displayed on the above-described vertical display 6 in real time. The above-described renewal area switching section is set for switching whether or not the renewal of the turning image data in the divided area of the image memory is performed automatically, in accordance with the situation of the still image or the motion image of the image signal outputted from the image feeding unit or the signal included in this image signal. For example, the area of the above-described image memory corresponding to a blank space generated in a lower portion or an upper portion of the above-described motion image for advertisement is renewed into the mode of renewing the turning image data in real time and at the same time, the area which has displayed the image signal fed and displayed in real time is renewed into the mode of stopping the renewal

of the area whereby the above-described image signal inputted in real time is fed and displayed in a portion which has been the above-described blank space. One site, which has been renewed last, of the above-described image signal inputted in real time may be displayed as a stationary image in a portion where the image has been displayed.

Namely, it is unnecessary to separately input the image produced by using a personal computer or the like ~~as described above~~. It is therefore unnecessary to modify this image or to connect and operate the personal computer. Since the blank space may be filled with image extremely easily by using a single image source by one switching operation of the above-described renewal area switching section 11, the system is extremely easy to handle and is less expensive.

Also, for example, the image from the image feeding unit 1 for essentially occupying the entire image displayable area of the vertical display 6 is adapted to be able to be displayed on the vertical display. It is possible to display the above-described motion image for advertisement without any blank space in the image field of the above-described vertical display 6 only by inputting the image signal for the above-described vertical display without any needs to display the image, worked by a personal computer or the like as in the conventional manner, on the blank space.

Namely, since it is unnecessary to separately input the image produced by thus using the personal computer or the like, it is unnecessary to work this image or to connect and operate the personal computer and it is possible to fill the above-described blank space with the image extremely easily by one image source, which is extremely easy to handle and costless.

Furthermore, for example, the turning image data are displayed as a regular image (motion image) that may display the turning image data renewed in real time in correspondence with the image signal inputted in real time from the image feeding unit 1 on one hand, without simply displaying the same image on one image display area of the image display area of the vertical display 6 and the other predetermined image display area and the turning image data renewed last in the turning image data renewed in real time are displayed as a stationary image (still image) on the other hand. In the image where the motion image for propaganda of introducing a commercial product and a still image where a

letter telop such as a company name, a product name and the like used in a general TV commercial film are displayed in order, it is possible to store (freeze) in the blank space the letter telop which should run inherently due to the start of the motion picture. It is possible to constitute the innovative advertisement image which may be displayed on the vertical display together with the motion image.

Also, for example, in practicing of golf swing, practicing of dance or the like, there are cases where motions of a body in practicing are taken and thereafter the motions are confirmed by himself or herself. Consequently, according to the present invention, for example, the laterally elongated plasma display which is large in size and thin and displays an image clearly is set up with its orientation being changed in the vertical direction so that the vertical display may readily be realized. The image signal from the image feeding unit is subjected to the 90 degree turning process in real time and outputted to the vertical display in an easy and stable method, and the image data subjected to the 90 degree process are displayed on the above-described vertical display. Accordingly, it is possible to readily realize the advertisement medium which exhibits the advertisement effect that has not been realized by the laterally elongated image field (laterally elongated display) at all, i.e., the excellent catch eye effect due to the poster advertisement effect because of the vertical display. Accordingly, in synergy with the eye catching effect exhibited by the vertical display, it is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an extremely innovative, practical display apparatus in which the excellent advertising effect may be expected as a poster advertisement.

An embodiment of the present invention will now be described with reference to the drawings.

In the case where the human body image is taken by a video display apparatus according to the embodiment, an image signal outputted from the image feeding unit 1 such as TV broadcasting, a VTR, a camera, an aspect ratio, i.e., a ratio of longitudinal length to lateral length of the regular laterally elongated display is 3:4 or 9:16. In order to take the entire body image a personal computer or the like is turned through 90 degrees (270 degrees)

and inputted into the elongated display 6 which is changed in the orientation of the laterally elongated display by a regular video camera, the image is picked up from a distant position to some extent. It is impossible to display the entire human body image of a specified person while effectively utilizing the image displayable range of the above-described lateral elongated display.

Therefore, in the above-described case, conventionally, the above-described camera is turned through 90 degrees and the entire human body image is taken. This image is naturally displayed and turned through 90 degrees when the image is displayed on turning the laterally elongated display. The image is not displayed in the correct orientation of the image field. In order to watch the image well on a home TV, it is necessary to watch the image while turning the orientation of the above-described TV in a vertical direction.

However, it is necessary to turn the TV through 90 degrees at home whenever the taken image is to be watched, which is troublesome inevitably.

In this point, according to the present invention, even in the case where the orientation of the video camera is turned through 90 degrees for the vertical image so that the image turned through 90 degree is to be outputted, it is possible to display turn this image, turned through 90 degrees, by 270 degrees on an enlarged scale, for example. Accordingly, it is possible to display the image in the correct orientation also on the laterally elongated display. It is unnecessary to turn the home TV and it is possible to enjoy the image taken while the above-described camera is turned..

Also, for example, there is provided an image cutout section 12 structured so that the image signal from the above-described image feeding unit 1 is written in the memory, a predetermined portion written in the above-described memory is read out before the 90 degree turning process of the written image data (possibly after the 90 degree turning process) to thereby produce a trimming image signal that is cut out from the predetermined portion of the above-described image signal, and this trimming image signal may be outputted from the output section 5 to the above-described display whereby it is possible to display the trimming image, obtained by removing an unnecessary image from the above-described image signal and rectified in scheme, on the above-described vertical display 6.

Therefore, as described above, since the regular video camera is used for the laterally elongated display, in order to take the entire body image of a person who is the vertical image, due to the aspect ratio of the above-described laterally elongated display, it is necessary to take the image from a distant position to some extent. In the case where the entire body image of the specified person is to be taken, even if the image other than him or her is unnecessary, the image other than the specified person, i.e., the object located on the right and left directions of the specified person is picked up together because of the laterally elongated field so that there is a fear that the image (point) which should be most stressed would become vague. However, it is possible to output the trimming image signal obtained by removing the unnecessary portion out of this image and rectified in scheme to the above-described display. Namely, it is possible to display on the above-described display only the really necessary image out of the above-described image signal.

Furthermore, for example, the above-described image cutout section 12 is set up so that a predetermined portion of the image signal of the laterally elongated display outputted from the above-described image feeding unit 1 is enlarged and displayed on the above-described display by preparing the trimming image signal cut out in a vertical direction. Thus, it is possible to enlarge and display on the image field of the vertical display 6 the vertical trimming image signal from which the unnecessary image is removed. It is possible to display the vertical image such as the entire body image of the person much more clearly than ever.

Furthermore, for example, the above-described image cutout section 12 is set up so that the trimming image signal by cutting out a middle portion of the above-described image signal is enlarged and displayed on the above-described display. Therefore, it is possible to always enlarge and display on the vertical display 6 the middle portion of the above-described image signal where in general the most important image is displayed. It is possible to constitute the innovative image whose point is more clarified.

Accordingly, in the case where the entire body image of the specified person is particularly important as in practicing of golf swing or dance as described above, it is possible to enlarge and display only the specified person on the overall image field of the vertical display 6. It is possible to realize the innovative image that has not been realized in spite of

the strong demand. Not only does this image exhibit a remarkable advertisement effect as an advertisement image but also it is possible to further enhance the value of an amusement image, for example.

Consequently, according to the present invention, for example, the laterally elongated plasma display which is large in size and thin and displays an image clearly is set up with its orientation being changed in the vertical direction so that the vertical display may readily be realized. The image signal from the image feeding unit is subjected to the 90 degree turning process in real time and outputted to the vertical display in an easy and stable method, and the image data subjected to the 90 degree process are displayed on the above-described vertical display. Accordingly, it is possible to readily realize the advertisement medium which exhibits the advertisement effect that has not been realized by the laterally elongated image field (laterally elongated display) at all, i.e., the excellent catch eye effect due to the poster advertisement effect because of the vertical display. Accordingly, in synergy with the eye catching effect exhibited by the vertical display, it is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an extremely innovative, practical display apparatus, a display method and an advertising method using the display apparatus and the display method, in which the excellent advertising effect may be expected as a poster advertisement.

Specific embodiments of the present invention will now be described with reference to the drawings.

In a first embodiment, a jump scanning type analog video signal inputted is quantized and decoded by a decoder circuit, the quantized image data are converted into a sequential scanning type by a sequential scanning type circuit, and the image is written into a memory on the basis of an address produced by an address generating circuit and is read out on the address on the basis of the address turned through 90 degrees and formed into an analog signal by an D/A converter so that the image is turned, fed and displayed on the display in real time.

More specifically, the system is composed of a decoder circuit 22 for decoding an

~~inputted jump scanning type analogue video signal 21, a sequential scanning type circuit 23 for converting the decoded jump scanning type analogue video signal 21 into the scanning type in order, a memory 24 for storing as image data the jump scanning type analogue video signal 21 converted into the sequential scanning type, an address generating circuit 26 for writing the image data to a memory writing address 28 that is a designated address of the memory 24 and for reading out from a memory readout address 29 that is a designated address, and a D/A converter 25 for converting the read image data into an analog signal whereby the image data are turned through 90 degrees when the data are read out from the memory 24 and this turning image output 27 may be displayed on the display such as a display in real time.~~

~~Accordingly, any software is not used and the image may be turned only by the hardware. Therefore, without modifying a generally running image such as an on-air image or a video tape, the image replayed by the image replay unit is turned through 90 degrees in real time to thereby make it possible to use commercially the image with high image quality or to use the image for delivery of information.~~

~~Subsequently, a second embodiment will be described.~~

~~A display apparatus according to the second embodiment is adapted for outputting an image signal outputted from an image feeding unit 1 such as TV broadcasting, VTRs, cameras, personal computers or the like to a laterally elongated display by turning 90 degrees (270 degrees) or to a vertical display 6 which is set in a vertical direction by turning a laterally elongated display through 90 degrees.~~

~~More specifically, in the display apparatus according to the second embodiment, a jump scanning type image signal outputted from the image feeding unit 1 such as TV broadcasting, VTRs, cameras, personal computers or the like is converted into a sequential scanning type, the image signal that has been converted into the sequential scanning type is rotated through 90 degrees (270 degrees), and the above-described turning image signal is synthesized on the image signal of the sequential scanning type to be separately inputted and is outputted. Letter information produced by a personal computer or the like is inputted as the sequential scanning type image to be separately inputted.~~

~~Since the real time property of the image to be separately inputted is not important,~~

~~the turn of the image is performed by a method of using a conventionally available software.~~

~~The image turn is performed by the hardware on the jump scanning side to be inputted in real time as described above and the real time property is not degraded.~~

~~Namely, the second embodiment is structured as follows. In order to display the NTSC TV image on an image signal receiver (vertical display 6 as shown in Fig. 4) set by turning through 90 degree to have a vertical image field like, for example, a poster, the second embodiment is directed to the display apparatus for turning the NTSC TV image through 90 degrees in real time but is not to rotate the image by using the software like the conventional manner. Only the hardware is used and the image is turned in real time. For example, the analogue image signal of the jump scanning type inputted from an input section~~

~~Namely, the display apparatus according to the embodiment is composed, as shown in Fig. 2, is converted into the sequential scanning type in a scanning type converting section 3 composed of a sequential scanning circuit. The image is written in the memory, the written image data are read out in terms of address turned through 90 degrees, and a 90 degree image turning processing section 4 is constructed so as to rotate the image. The image of the sequential scanning type turned through 90 degrees is outputted from the output section 5 to the vertical display 6.~~

~~The display apparatus according to the second embodiment and a poster advertisement method using this display apparatus will now be described more specifically.~~

~~More specifically, as shown in Fig. 2, the display apparatus according to the second embodiment is composed of an input section 2 connected to an output terminal of the image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera, a personal computer or the like for inputting an image signal of jump scanning type to be outputted from this image feeding unit 1 in real time, a quantizing section 7 composed of a decoder circuit for quantizing the image signal of jump scanning type to be inputted from the input section 2 in real time, a scanning type converting section 3 composed of a sequential scanning circuit for converting the quantized image signal into the sequential scanning type image signal, a 90 degree image turning processing section 4 for turning the image by the image signal converted into the sequential scanning type in real time through 90 degrees (including 270 degrees), an analogue signal section 8 composed of a D/A converter for making the image signal, turned~~

through 90 degrees, an analogue signal, an image synthesizing section 9 for synthesizing with an image signal composed of the sequential scanning type image, image data, letter data produced by the personal computer and an output section 5 for outputting the image (picture) synthesized by this image synthesizing section 9. This output section 5 is connected to an input terminal of the vertical display 6 set by changing the orientation of the laterally elongated signal receiver (laterally elongated display) through 90 degrees to thereby feed out and display the synthesized image including the real time image.

Also, in the second embodiment, as described above, there is provided an image synthesizing the sequential scanning type image signal with the blank display data such as the sequential scanning type image signal, image data, letter data or the like which have been produced by a computer in advance. The synthesized data signal including the image signal displayed in real time from the image synthesizing section 9 is outputted from the above-described output section 5.

Namely, only the image signal turned through 90 degrees by the 90 degree image turning processing section 4 is not outputted but the synthesized data are produced to the image signal, the image data, the letter data with the sequential scanning signal by the personal computer and are synthesized with the image signal to be inputted in real time in the image synthesizing section 9 so that the advertisement information may be simultaneously displayed also in the blank of the real time image under the control of the personal computer.

In the case here the motion picture is also entrained in separate advertisement information to be outputted by the personal computer, it is also possible to turn and entrain the 90 degree turning image by the software or to compile the image data or the letter data or to display different data depending upon time.

Also, in case of synthesizing analogue data, the image synthesizing section 9 is provided after the analogue signal section 8. In case of digital synthesizing, the synthesized data by the above-described sequential scanning signal separately synthesized as shown in Fig. 3 are quantized in a quantizing section 7 and synthesized in image in an image synthesizing section 9. An analog signal section 8 is provided after the analog signal section 8 so that the image is outputted from the output section 5.

Also, in the second embodiment, the image signal turned through 90 degrees and outputted in real time from such a display apparatus is fed and displayed in real time on the thin vertical plasma display set in a vertical direction by turning a wall hung thin horizontal color display (plasma display used in this case) so that the poster advertisement is achieved by the vertical plasma display where the image from the image feeding unit 1 is displayed in real time.

Incidentally, the jump scanning method means a method in which the transfer amount may be reduced to half. When a single image which is represented by 525 scanning lines is transferred by 60 frames per second, the transfer amount is increased. Accordingly, the one image is displayed by two frames. Namely, the odd number of the scanning lines from 1 to 525 is scanned for the first frame and the even number of the scanning lines from 2 to 524 is scanned for the next one frame. Accordingly, it appears that the motion picture of 60 frames per second is transferred to eyes due to a residual image phenomenon.

The sequential scanning method means a method in which the transfer amount is large but the flicker is negligible because the jump scanning is not conducted and all the 60 frames are transferred.

The sequential scanning circuit is adapted to convert the inputted jump scanning type image signal into the sequential scanning type.

Also, the 90-degree image turning processing section 4 is composed of a memory for quantizing and converting the inputted jump scanning type analog image signal into the sequential scanning type by the sequential scanning circuit and for storing as image data the jump scanning type image signal converted into the sequential scanning type and an address generating circuit for writing the image data into the memory write address that is the designated address of the memory and for reading out the image data from the memory readout address that is the designated address. When the image data are read out from the memory, the image data are turned through 90 degrees, and this turning image output may be displayed on the vertical display 6 through the D/A converter (analog signal section 8) in real time.

The address generating circuit is adapted to produce the memory write address in writing and the memory read out address where the 90-degree turning image is located in

~~reading out.~~

Therefore, in the second embodiment, the laterally elongated plasma display which is large in size, thin and clearly displays the image is set up by changing the orientation in the vertical direction so that the image signal from the image feeding unit 1 is subjected to the 90 degree turning process and outputted in real time to the vertical display and while this is renewed in real time, this is displayed on the above-described vertical display. Accordingly, it is possible to readily realize the advertisement display which exhibits the advertisement effect that has not been realized by the laterally elongated image field (laterally elongated display) at all, i.e., the excellent catch eye effect due to the poster advertisement effect because of the vertical display. In addition, it is possible to display the image signal from the various image feeding units 1 in real time to the vertical display 6 which is changed from the laterally elongated type to the vertical type in combination with other image data or letter data or the like. Therefore, it is possible to display as the poster advertisement the various images in real time onto the vertical display 6 and to expect the excellent advertisement effect by the poster advertisement.

For example, one example thereof will now be described. In the case of performing the poster advertisement in a travel agency shop, if an extremely less expensive Hawaii tour is to be advertised, a beautiful image (motion picture) of Hawaii is displayed in real time by a DVD (player), while selecting a DVD software, on a central portion or an upper portion of the vertical display 6 which is the laterally elongated plasma display and set up in the vertical direction like a vertical signboard. The image data of the image of the hotel or the letters representing the "extremely less expensive", and the advertisement phrase of the travel agency synthesized by the personal computer are synthesized and displayed with the motion picture. Also, in the case where other motion picture is to be entrained by another personal computer in addition to the real time image, the tour contents are always further changed and displayed by the image field touch operation or the personal computer operation by the personal computer so that the innovative image signboard that exhibits the excellent poster advertisement may readily be realized (see Fig. 5).

In addition, since the motion picture is fed and displayed in real time, it is possible to change to a different DVD and to display. In some cases, it is possible to connect the system

~~to the television receiver. Otherwise, if various image feeding units 1 are connected to a plurality of input terminals in advance, it is possible to perform the switch and display to the television broadcasting through the input switch by a simple operation at the shop.~~

~~Thus, it is usable to various advertisements. It is possible to readily switch the image contents of the real time images as desired depending upon the will of the user. It is possible to use the television broadcasting on air as the poster advertisement, which has not been conventionally attained.~~

~~Thus, if a plurality of DVDs, VTRs, cameras and the like are prepared (to be connected to the input section 2) and may be operated while being switched over suitably, and a number of pieces of DVD or VTR software are prepared, respectively, it is possible to increase the variation to the limitless manner.~~

~~Also, it is possible to set and display other advertisement information by the preparation and switching operation of the personal computers as desired. Since it is easy to erase, enlarge, contract or shift the real time image, it is possible to change various advertisement images in response to the set site, time or needs of the user as desired.~~

~~A third embodiment will now be described.~~

~~In the third embodiment, like the second embodiment, the image signal for the laterally elongated display is turned through 90 degrees and inputted into the elongated display 6 which is changed in the orientation of the laterally elongated display so that the blank space generated in the upper portion and the lower portion of the image is filled. The work of separately inputting the image produced by the personal computer or the like as described above may be dispensed with and the system is much easier to handle.~~

~~Namely, the display apparatus according to the third embodiment is composed, as shown in Fig. 6, of an image data outputting section 10 in which a jump scanning type image signal of TV broadcasting, a VTR, a camera, a personal computer or the like is converted into a sequential scanning type, and the image signal that has been converted into the sequential scanning type is turned through 90 degrees (270 degrees) (possible to convert the 90 degree turn image into the sequential scanning type after the turn), the turning image data read out from the image memory are outputted to the vertical display 6 while always once writing to the image memory the turning image data subjected to the 90 degree turning process and~~

renewing in real time the image memory to make it possible to feed and display the image data in real time to the vertical display 6, and the turning image data where a area of the above-described image memory is divided into a plurality of areas and which is written in each divided area may be displayed in a corresponding image display area of the above-described vertical display 6 divided in a plurality of areas in the same manner, and a renewal area switching section 11 in which each of the above-described areas may be changed from a mode of renewing the turning image data in real time to a mode of stopping the renewal in real time or the mode of stopping the renewal to the mode of renewing the turning image data in real time to thereby make it possible to display the image on the above-described blank space without needs of the personal computer.

This image data output section 10 is structured to as to feed and display the turning image data written in real time in the above-described image memory on the above-described vertical display 6 in real time not for each area but together.

Namely, the above-described image data outputting section 10 is structured so that the turning image data to be renewed every time in response to the image signal to be inputted in real time from the image feeding unit 1 are displayed as a regular image (motion picture) which may be displayed as a picture image to the image display area of the above-described vertical display 6 corresponding to one area set to renew in real time the turning image data to be written in the above-described image memory, and the turning image data renewed last in the turning image data renewed in real time are displayed as a stationary image (still picture) to the image display area of the above-described display 6 corresponding to another predetermined area set to stop the renewal of the above described turning image data. Accordingly, the motion pictures or the stationary pictures are displayable in the image display area divided into a plurality of areas, respectively.

Also, the area of the image memory is divided into two so that the overall image displayable range of the above-described vertical display 6 may display the image divided into the two image display areas having substantially the same area juxtaposed in the up-and-down direction. At the same time, the overall image displayable region may essentially occupy the two-divided image display region (see Fig. 84). Namely, the image to be displayed on this vertical display 6 is composed, in scheme, of the two images arranged in

the vertical direction and displayed in the regular laterally elongated display. It is possible not only to display the images displayed in the laterally elongated display as they are without any abnormal feel but also to utilize the image displayable range of the above-described vertical display 6 without any dead space to thereby make it possible to further effectively utilize the large size display.

Incidentally, in the ~~third~~-embodiment, the two image areas of the above-described display 6 are juxtaposed in the vertical direction. Three or four image display area or more may be juxtaposed together. In this case, it is possible to display a plurality of still pictures together with the motion picture on the above-described vertical display 6. Also, a plurality of pictures may be arranged in the right and left directions.

Also, the renewal area switching section 11 is set up so that the turning image data are written and renewed in real time in one area selected by the renewal area switching section 11 (possible to stop the renewal) and the renewal is stopped in another area.

Accordingly, in the ~~third~~-embodiment, the motion picture and the still picture are displayed in the image display region of the vertical display 6 by a single image source to be inputted (for example, real time NTSC image signal) to make it possible to display the advertisement image without any blank space.

Also, in the ~~third~~-embodiment, the above-described renewal area switching section 11 is set up so as to change a mode of whether or not the turning image data in one area of the image memory and the other area are automatically renewed. Accordingly, the position where the motion picture (still picture) is displayed is switched suitably in correspondence with the image to be displayed. An impression that has not been experienced is given to the observer so as to attract the attention so that the extremely innovative advertisement image may be provided.

More specifically, as shown in Fig. 62, the past image data are compared with the current image data in, for example, one area (area A) where a mode of renewing the turning image data in real time is set. In the case where the condition that no change occurs in the image data is kept for a predetermined period of time, the renewal is stopped and the mode is set up to be changed by the motion picture/still picture detecting circuit 13 structured so that the mode of the other area (area B) may be changed to the mode of renewing in real time

when the change of the image data is detected from the condition that no change occurs continuously for the predetermined period of time. Namely, normally, the letter telop or the like that will run in moving on a next scene may be stored (frozen) automatically in the blank space. It is possible to constitute the advertisement image that not only may effectively utilize the large image field but also may propagate more effectively by the still image such as the letter telop in synergy with the motion picture.

Incidentally, in the ~~third~~-embodiment, the renewal area switching section 11 is automatically switched over in correspondence with a situation of the motion picture and the still picture of the image signal to be outputted from the image feeding unit 1. However, as shown in Fig. 73, a control signal for operating the above-described renewal area switching section 11 is included in the image signal to be outputted from the above-described image feeding unit 1 so that the mode of setting whether or not the turning image data of one area of the image memory and the other area are renewed automatically when the control signal is inputted may be set to be switched over. In this case, the scene that is considered as the most effective one by the person who produces the image may be displayed intentionally together with the motion picture to thereby enhance the advertisement effect more effectively. Also, it is possible to set the system so that the renewal area switching section 11 may be operated manually as desired. It is possible to set the system so that the switching operation is performed every predetermined period of time (for example, every ten seconds) by a timer.

Also, when the switching operation of the area to be renewed by the above-described renewal area switching section 11 is performed, in this embodiment, one area is once switched to the other area, that is, the switching is performed so that the image display area where the motion picture or the still picture is to be displayed is switched to the upper portion or the lower portion. It is possible to set the system so that the switching is performed plural times automatically when the switching is to be performed. For example, in the case where the switching is performed twice (even number of times) when the switching is to be performed, the image display areas of the vertical display 6 in which the motion picture or the still picture is displayed are not switched over and it is possible to always display the motion picture and the still picture, for example, in the upper portion and the lower portion,

respectively. Also in case of audition near the vertical display, it is possible to constitute the advertisement image that may be subjected to the audition in a good condition. Furthermore, the switching is performed many times for a short period of times so that the image such as the motion picture may be displayed in the display areas on the upper and lower portions due to the residual image phenomenon.

Furthermore, the display apparatus according to the ~~third~~-embodiment and a poster advertisement method using this display apparatus will now be described in more detail.

The display apparatus according to the ~~third~~-embodiment is composed of an input section 2 connected to an output terminal of the image feeding unit 1 such as TV broadcasting, a VTR, a DVD, a camera or the like for inputting an image signal of jump scanning type to be outputted from this image feeding unit 1 in real time, a quantizing section 7 composed of a decoder circuit for quantizing the image signal of jump scanning type to be inputted from the input section 2 in real time, a scanning type converting section 3 composed of a sequential scanning circuit for converting the quantized image signal into the sequential scanning type image signal, a 90 degree image turning processing section 4 for turning the image by the image signal converted into the sequential scanning type in real time through 90 degrees (including 270 degrees), an image data outputting section 10 structured for always writing the turning image data already subjected to the 90 degree turning process, renewing this image memory in real time, and outputting the turning image data read out from this image memory so as to be fed and displayed in real time on this vertical display 6 and structured so that an area of the above-described image memory is divided into a plurality of areas and the turning image data written in each divided area may be displayed in the image display area corresponding to the above-described vertical display 6 divided in a plurality of areas in the same manner, a renewal area switching section 11 structured so that each area of the above-described memory may be changed from a mode of renewing the turning image data in real time to a mode of stopping the renewal or from the mode of stopping the renewal of the turning image data to the mode of renewing in real time, and an analogue signal portion 8 composed of a D/A converter for making the image signal, turned through 90 degrees, an analogue signals. The output section 5 is connected to an input terminal of the vertical display 6 set by changing the orientation of the laterally elongated signal receiver (laterally

elongated display) through 90 degrees to thereby feed out and display the real time image that has been turned through 90 degree.

Accordingly, in the third The image signal turned through 90 degrees and outputted in real time from such a display apparatus is fed and displayed in real time on the thin vertical plasma display set in a vertical direction by turning a wall hung thin horizontal color display (plasma display used in this case) so that the poster advertisement is achieved by the vertical plasma display where the image from the image feeding unit 1 is displayed in real time.

Incidentally, the jump scanning method means a method in which the transfer amount may be reduced to half. When a single image which is represented by 525 scanning lines is transferred by 60 frames per second, the transfer amount is increased. Accordingly, the one image is displayed by two frames. Namely, the odd number of the scanning lines from 1 to 525 is scanned for the first frame and the even number of the scanning lines from 2 to 524 is scanned for the next one frame. Accordingly, it appears that the motion picture of 60 frames per second is transferred to eyes due to a residual image phenomenon.

The sequential scanning method means a method in which the transfer amount is large but the flicker is negligible because the jump scanning is not conducted and all the 60 frames are transferred.

The sequential scanning circuit is adapted to convert the inputted jump scanning type image signal into the sequential scanning type.

Also, the 90 degree image turning processing section 4 is composed of a memory for quantizing and converting the inputted jump scanning type analog image signal into the sequential scanning type by the sequential scanning circuit and for storing as image data the jump scanning type image signal converted into the sequential scanning type and an address generating circuit for writing the image data into the memory write address that is the designated address of the memory and for reading out the image data from the memory readout address that is the designated address. When the image data are read out from the memory, the image data are turned through 90 degrees, and this turning image output may be displayed on the vertical display 6 through the D/A converter (analog signal section 8) in real time.

The address generating circuit is adapted to produce the memory write address in writing and the memory read out address where the 90 degree turning image is located in reading out.

Accordingly, in the embodiment, the area of the above-described image memory is divided in correspondence with the divided image display areas of the above-described vertical display. The normal image that may display the motion picture to be renewed in real time may be displayed in, for example, one area of the above-described vertical display by the display area switching section structured to make it possible to change to the mode of renewing in real time the turning image data written in each of these areas or the mode of stopping the renewal. One scene out of the images to be renewed in real time may be displayed in another predetermined area, i.e., a blank space. The blank space which is conventionally filled by using a plurality of image sources by a personal computer may be effectively utilized by a single image source without using any personal computer. It is therefore extremely easy to hand the system in a less expensive manner. The excellent advertisement effect due to the poster advertisement may be expected.

For example, one example will be described. In the case where TV commercial film to be inputted in real time and composed of a still image of a letter telop representing a company name or a product name and a motion picture for advertisement or introduction of the commercial product is displayed for the poster advertisement on a vertical display 6 which is a laterally elongated plasma display according to the display apparatus of this embodiment and which is set like a vertical signboard, for example, when, first of all, such contents that letters shown in Fig. 95 are fed to run, the motion picture is displayed in the upper image display area in real time during the run of the contents. When the run stops and the still picture condition is kept for a predetermined period of time (for example one second) or more, the renewal is stopped in the area (area A) of the image memory for feeding and displaying the image in the upper image display area of the vertical display 6 for displaying the still image. The still picture is displayed in this upper image display area (see Fig. 106).

Subsequently, when the contents such that the image shown in Fig. 117 fades in are fed and the motion picture is detected, the above-described turned image data are renewed in

real time in the area (area B) of the image memory for feeding and displaying the image in the lower image display area opposite to the area where the above-described still picture is displayed. The motion picture is displayed in this area B. When the motion stops and the condition of the still picture is going on as in the above-described case, the renewal stops in this area B. The still picture is displayed in the lower image display area (see Fig. 428).

Furthermore, when the contents composed of motion pictures as shown in Fig. 439, the above-described turning image data are renewed in real time in the area A opposite to the area B where the motion picture is detected in the same manner and the above-described renewal stops. The motion picture is displayed in the upper image display area (see Fig. 440).

Namely, not only is it possible to display the TV image on air which could not be displayed conventionally on the vertical display 6 but also it is possible to display the motion image in the area opposite to the image display area where the still picture is displayed while storing (freezing) this still image on the upper portion or the lower portion of the vertical display 6, for example, whenever the still picture such as a letter telop is displayed. In the TV commercial film, the effect of the letter telop is further enhanced, and the extremely innovative and effective poster advertisement image that could not be attained by the conventional laterally elongated display may be displayed. It is possible to realize an innovative image signboard that may perform the excellent poster advertisement in an inexpensive manner and that is extremely easy to handle without needs of personal computers.

~~The other is the same as the second embodiment.~~

~~A fourth embodiment will now be described.~~

~~The fourth embodiment is a modification of the third embodiment and is directed in the same manner to the structure in which the image signal for the laterally elongated display is turned through 90 degrees and inputted into the vertical display 6 obtained by changing the orientation of the laterally elongated display into the vertical direction so that the step of separately inputting the image produced by the personal computer or the like for filling the blank space generated in the upper portion or the lower portion of this image. The system is easier to handle.~~

Namely, as shown in Fig. 15, the display apparatus according to the fourth embodiment is composed of an input section 2 for inputting the image signal outputted in real time from the image feeding unit 1 such as TV broadcasting, a VTR, a DVD, a camera or the like, a 90-degree image turning processing section 4 for writing to the memory the above-described image signal to be inputted in real time from this input section 2 and for making it possible to turn this written image data through 90 degrees, and an output section 5 for outputting the above-described image signal to the laterally elongated display or to the vertical display 6 which is set in the vertical direction by turning the laterally elongated display through 90 degrees. The apparatus is provided with an image cutout section 12 in which a predetermined portion of the image data written in the above-described memory is read out, wherein a trimming image signal cut out with a predetermined portion of the image signal from the above-described image feeding unit 1 is prepared, and this trimming image signal may be outputted from the above-described output section 5 to the above-described display. The apparatus is structured so that the image signal outputted from the above-described image feeding unit 1 is fed and displayed in real time as the trimming image signal turned through 90 degrees by the image cutout section 12 and the 90-degree image turning processing section 4.

In the fourth embodiment, the image cutout section 12 is provided in which the image from the above-described image feeding unit 1 is written in the above-described memory, and a predetermined portion is left and the other portion is to be removed out of the image data written in the memory whereby the image signal outputted from the image feeding unit 1 to the vertical display 6 may be fed and displayed to the vertical display 6 as the trimming image signal in which only the predetermined portion is left and the scheme is rectified.

The image cutout section 12 is set so that the above-described image signal is cut out in the vertical direction. More specifically, an aspect ratio of the normal image (ratio of the vertical length to the horizontal length) is 3:4 or 9:16. On the basis of this image signal, the system is set so that the longitudinal image signal having the aspect ratio of 4:3 or 16:9 is cut out.

Incidentally, if the above-described image data are cut out longitudinally, any cutout

method may be used. However, in the fourth embodiment, the lateral length is shortened without changing the longitudinal length of the above-described data so that the longitudinal image is obtained, and the system is set so that this longitudinal image signal is cut out.

Also, the image cutout section 12 is structured so that the longitudinal trimming image signal that has been cut out may be displayed on a large scale on the image field of the above-described vertical display 6. More specifically, the image signal may occupy essentially all the image displayable range of the above-described vertical display.

Accordingly, it is possible to display the image without generating any blank space in the above-described vertical display 6. It is unnecessary to synthesize the image data processed by using a plurality of image sources by a personal computer or the like with the above-described image signal as in conventional manner. It is possible to display the entire body image of the person on the overall image field of the vertical display 6 to constitute the innovative image that has never been attained.

Namely, for example, if the image cutout section 12 is set so that the image data in the designated area of the above-described memory are always left and the image data in the other area are removed and thereafter, the data are read out whereby the trimming image signal is fed and displayed to the above-described display 6, in general, the most important information is displayed in the middle of the image. However, in the case where the object which is the point is always displayed in the same position of the display, for example, in a fashion show, in the image where the important object (model in this case) is always displayed in the middle of the image field, the corresponding area is designated to the middle of the image so that it is possible to always enlarge and display on the above-described vertical display only the model that is the point while removing the unnecessary image such as audience or stage or the like to be displayed on both sides of the model.

Also, for example, this image cutout section 12 may be set so that the trimming image signal in which the designated person is searched, the person is always left and the other portion is removed is fed and displayed onto the above-described vertical display. In this case, only the designated person is enlarged and displayed on the above-described display 6. For example, it is possible to set the system so that only a favorite TV star is always enlarged and displayed in the overall image field of the above-described vertical

display 6.

The display apparatus according to the fourth embodiment and a poster advertisement method using this display apparatus will now be described more specifically.

The display apparatus according to the fourth embodiment is composed of an input section 2 connected to an output terminal of the image feeding unit 1 such as TV broadcasting, a VTR, a DVD, a camera or the like for inputting an image signal of jump scanning type to be outputted from this image feeding unit 1 in real time, a quantizing section 7 composed of a decoder circuit for quantizing the image signal of jump scanning type to be inputted from the input section 2 in real time, a scanning type converting section 3 composed of a sequential scanning circuit for converting the quantized image signal into the sequential scanning type image signal, an image cutout section 12 for writing to the memory as the image data the image signal converted into a sequential scanning type in real time and for removing the image data written in the other area while leaving the image data written in a predetermined area of this memory to thereby provide a trimming image signal cut out only with the predetermined portion of the image signal, a 90 degree image turning processing section 4 for turning the image of the trimming image signal converted into the sequential scanning type in real time through 90 degrees (including 270 degrees), an analogue signal section 8 composed of a D/A converter for making the trimming image signal, turned through 90 degrees, an analogue signal, and an output section 5 for outputting the above-described image signal a laterally elongated display or a vertical display 6 set up in a vertical manner while the above-described laterally elongated display has been turned through 90 degrees. The above-described output section 5 is connected to an input terminal of the vertical display 6 set by changing the orientation of the laterally elongated signal receiver (laterally elongated display) through 90 degrees to thereby feed out and display the real time 90 turned trimming image.

Also, in the fourth embodiment, after the cutout of the above-described image signal (trimming process) has been performed by the above-described image cutout section 7, the 90 degree turning process is performed by the above-described 90 degree image turning processing section 5. However, it is possible to perform the trimming process after the 90 degree turning process has been performed.

Accordingly, for example, in a fashion show, only the entire body image of the model (possible to display a real size image) may be displaced without any blank space to the above-described large-size vertical display 6 while removing an unnecessary image around the model. It is therefore possible to display the extremely innovative advertisement image that has never been attained and is extremely strongly impressive to the audience.

Accordingly, in the fourth embodiment, since no software is used and the image may be turned only by the hardware, the image replayed by the image replayer is turned through 90 degrees in real time without processing an image that is available on the market such as on-air image, a video tape or the like so that the image may be displayed on the vertical display 6 while the laterally elongated is kept in the vertical direction. The trimming image which is rectified in scheme may be enlarged and displayed, without using any software, also in a blank space generated in the upper portion or the lower portion of the image turned through 90 degrees.

Namely, the image constituted according to the fourth embodiment is used as the advertisement image for propagating to many people but also the image is highly valuable as an amusement image for personal use while the image is rectified as desired.

In addition, for example, in golf swing practice or the like, in the case where the image taken while a video camera is turned through 90 degrees for picking up the entire image of a person is to be watched at home, his or her entire body image is turned through 90 degree and displayed in the horizontal direction in a home TV (laterally elongated display). Unless the home display is turned through 90 degree, the image is hard to see. However, even for such an image, with the 90 degree turning process, it is possible to see the image displayed on the home TV well in the correct image field orientation without needs to turn the home TV. For example, a predetermined portion of the image data written in the memory is read out and, for example, out of the image signal from the image feeding unit, the trimming signal left only with the specified person is prepared to the above-described vertical display so that it is possible to enjoy the image while the specified person is displayed on a large scale on the above-described large-size vertical display and the scheme of the image is rectified as desired. Furthermore, since only the important object out of the above-described image signal may be displayed without any blank space by using the overall display, in

~~synergy with the catch eye effect that is exhibited because of the vertical display, it is possible to realize the innovative image, which has never been realized, with the hardware structure that is extremely easy and costless without processing the image by using the software with a personal computer or the like. For example, it is possible to provide an extremely innovative practical display apparatus and an advertisement method using the display apparatus by which an excellent advertisement effect may be expected as the poster advertisement.~~

~~The other is the same as the second embodiment.~~

Incidentally, in this embodiment, the case where the NTSC image signal is outputted particularly from the image feeding unit 1 has been described in detail. The above-described image feeding unit 1 according to this embodiment is not limited to an image feeding unit that may output the image signal in real time such as TV broadcasting, a DVD, a VTR, a camera or the like. The unit may include concept of a unit that may once entrain the image signal of a personal computer and feed the image entrained. Accordingly, in this embodiment, not only the NTSC image signal but also the image distributed through an internet (broad band) may be displayed on the above-described vertical display 6 irrespective of wireless or wired systems.

Also, the system is set so that the scanning method is changed within the image feeding unit 1 whereby it is possible to display the image on the vertical display without needs of the above-described scanning type converting section 3 in the same manner as described above.

Also, in this embodiment, the case where the above-described image signal is turned through 90 degrees and displayed on the vertical display 6 which is set in particular by changing the orientation of the laterally elongated display into the vertical direction has been described in detail. However, it is possible to display the image on a laterally elongated display by turning the above-described image signal through 90 degree.

10/516551

DISPLAY APPARATUS

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates to a display apparatus in which a laterally elongated display is changed in orientation in a vertical direction to be used as a vertical display and an image is displayed on this vertical display in real time from an image feeding unit.

BACKGROUND ART

A technical innovation of an image feeding unit such as a TV receiver, a VTR, a camera and the like is remarkable and in this connection, a technical innovation of a display is also remarkable to attain a day-by-day development.

In particular, recently, a plasma display has been developed and put into practice so that a clear image may be displayed on a thin large-size display. Although it is still expensive, the image display technology has been drastically developed.

It is possible to clearly display a large-field realistic image without taking a large space by hooking such a plasma display for example on a wall or embedding it in a wall. However, this has not yet attained a satisfactory effect as an effective advertising means.

Namely, such a trial that a letter is superimposed on an image field by synthesizing with letter broadcasting or letter data or a letter telop is displayed in a marginal portion of the image field so that an advertising sentence may be displayed while a motion commercial film is displayed clearly has been already attained. However, it is hard to obtain the satisfactory advertising effect.

Even if a large-size plasma display is set not only at home but also in a place where people gather together, for example, shops, air ports, streets or the like and a clear advertising image is displayed there, although a temporary attention may be attracted to a beautiful large-size image field of this image, it is impossible to attract the attention to the contents of the advertisement.

In view of such a situation, as a result of repeated review and studies, the applicant has found that its cause is largely due to the fact that the image is displayed on the laterally elongated display.

Namely, in the image display technology thus far proposed, a laterally elongated image such as cinema is regarded to be similar to a human view field, a clear image such as a photographic picture is realized as much as possible and efforts are made to a display method of a wide laterally elongated image field. As a result, almost all the up-to-date displays are of a laterally elongated display type.

Accordingly, it is safe to say that almost all plasma displays that is expensive but large in size and thin to make it possible to provide a realistic clear image are also of a laterally elongated display type.

However, even if such laterally elongated displays are used for advertisement, although they are beautiful, it is impossible to ensure the satisfactory advertising effect.

Namely, if the advertising image is displayed on a laterally elongated display, so far as it is not concerned with a very interesting advertisement away from the thus far established common concept (potential sense) to a person who watches the image, such recognition is only caused that it is simple television broadcasting or a VTR runs without any attention. Even if a special commercial image is displayed, such recognition that a simple television commercial film runs is formed and the advertisement effect exceeding the television broadcasting (television commercial film) will not be generated.

Therefore, the applicant who has found out a problem that even if the plasma display that is the highest in the up-to-date image display technology is used, it is impossible to expect the advertising effect for this reason conceived that the laterally elongated display was intentionally changed in orientation and the advertisement was displayed in the vertical display changed in orientation.

It was found that the method to display the advertisement on this vertical display was more effective than expected and it was the actual state that the applicant himself was surprised at its effect.

Namely, a so-called poster advertisement effect was exhibited and it was newly recognized how large the advertisement capability of the poster advertisement was.

Almost all the current advertisement poster is of a vertical type. For this potential recognition, the vertical advertisement image may catch eyes and may be recognized as advertisement and attractive.

Accordingly, if the advertisement is displayed in a vertical manner, even if it is a motion picture, the advertisement may catch eyes and the advertisement is attractive to such an extent that the advertisement remains in brains as the advertisement poster on which the advertisement image is displayed while it was not recognized as simple television broadcasting or television commercial. Due to the appeal of the beautifulness of the image and the motion picture, the advertising information is propagated instantaneously.

If the poster advertisement is performed with a thin plasma display, the advertisement effect is more excellent due to the mobility and the clear beautifulness because of its thinness.

However, an advertisement means is being already practiced in which, while an attention is paid to this poster advertisement effect, a compiled advertisement image produced by a personal computer on a vertical display which is the laterally elongated display put in a vertical manner, or otherwise, in order to synthesize and display a motion picture, an image signal of a DVD or a VTR is once stored in the personal computer, the image is turned through 90 degrees by a software of the personal computer, and even if the image is displayed on the vertical display which is the laterally elongated display turned in a vertical manner, by this 90 degree turning process, the image may be displayed in a correct direction in the same manner as the manner that the image is displayed in the laterally elongated display.

However, according to this method in which the image is once stored in the personal computer and is turned through 90 degree, it is impossible to display various images on the longitudinal display in real time or to select, switch and display the images as desired.

Namely, according to the method in which the turning process is performed by using a 90 degree turning software in the personal computer and this is compiled and displayed on the vertical display, as a result, it is possible to display the motion picture on the vertical display which is the laterally elongated display like a poster advertisement but it is always necessary to perform the storage process in advance, which is troublesome. (In addition, not only does it need the time or steps but also the clearness of the image is remarkably deteriorated due to the process through the personal computer.)

Accordingly, conventionally, in order to use the vertical display while changing the orientation of the lateral elongated display and to display the image on the vertical display, it

is necessary to perform the process in advance by the software. It is therefore impossible to perform the poster advertisement with the image in real time.

In other words, since the image is not displayed in real time, in order to switch this image to another image, for example, in the case the image of a DVD player or a VTR player is to be replayed and displayed, it is impossible to change the image to another image or video tape, to switch the program to TV broadcasting, to change broadcasting channels or to switch the image to a current camera image of a place where a camera is set only by exchanging pieces of DVD software. It is thus impossible to perform such switching operation at site as desired or to continuously display the image in real time.

On the other hand, basically, it is sufficient to prepare and obtain a number of vertical image sources. However, there are not many such image sources. Also, it is possible to produce the image while keeping the pickup camera is set in a vertical manner. However, this is also costly and hard to attain.

In contrast, almost all broadcasting image or conventional software for DVDs or VTRs is also of a laterally elongated display type.

In view of the foregoing difficulties, according to the present invention, it is possible to readily realize an advertising medium that exhibits an advertising effect that could not be attained at all by a laterally elongated image field (laterally elongated display), i.e., a remarkable eye catching effect caused by a poster advertising effect with a vertical display, in which an already present laterally elongated display, for example, a thin large-size laterally elongated plasma display which clearly displays image is set up while changing the orientation in a vertical manner to thereby readily realize the vertical display with ease, an image signal from an image feeding unit is subjected to a 90 degree turning process and outputted to the vertical display, and this is displayed in real time on the above-described vertical display. It is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an extremely innovative, practical display apparatus in which the excellent advertising effect may be expected as a poster advertisement.

SUMMARY OF THE INVENTION

The essence of the present invention will now be described with reference to the accompanying drawings.

According to a first aspect of the present invention, there is provided a display apparatus characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 and making it possible for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display in real time, and an output section 5 for outputting a sequential scanning type image signal turned through 90 degrees in real time, wherein the image of the image feeding unit 1 turned through 90 degrees may be fed and displayed in real time on the vertical display 6 which is set in the vertical direction by turning a laterally elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section 4 are always once written in an image memory, the image memory is renewed in real time, and the turning image data read out from the image memory is outputted to said vertical display 6 so that the data may be fed and displayed in real time on the vertical display 6, further comprising an image data output section 10 in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area may be displayed in a corresponding display area of said vertical display 6 divided in a plurality of area in the same manner, and a renewal area switching section 11 structured to make it possible to change each area of said image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data or from the mode of stopping the renew of the turning image data to the mode of renewing the data in real time, wherein the image signal for advertisement turned through 90 degrees and outputted from said output section 5 is inputted to said vertical display 6 and the image of said image feeding unit 1 may be displayed on said vertical display 6 in real time and said renewal area switching section 11 is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in the divided area of the image memory in accordance with a signal

contained in the image signal or a situation of a picture image or a still image of the image signal outputted from the image feeding unit 1.

In the display apparatus according to the first aspect of the invention, turning image data to be renewed in real time in response to the image signal to be inputted in real time from the image feeding unit 1 are displayed as a normal image that may represent a motion picture to the image display area of said vertical display 6 corresponding to one area that is set to renew in real time the turning image data of said image memory, and the turning image data, renewed last, of the turning image data renewed in real time are displayed as a fixed image to said vertical display 6 corresponding to other predetermined area that is set to stop the renewal of said turning image data whereby the fixed image and the normal image of the image signal from the image feeding unit 1 may be displayed to said vertical display 6.

In the display apparatus according to the first aspect, the overall image displayable range of the large size vertical display 6 may be essentially occupied by a plurality of divided image display areas.

In the display apparatus according to the third aspect, the overall image displayable range of the vertical display 6 is divided into image display area juxtaposed in a vertical direction.

According to a fifth aspect of the invention, there is provided a display apparatus characterized by comprising an input section 2 for inputting an image signal outputted in real time from an image feeding unit 1 such as a TV receiver, a VTR, a DVD, a camera or the like, a scanning type converting section 3 for converting into a sequential scanning type image signal a jump scanning type image signal inputted in real time from the input section 2 or an image signal whose image has been turned through 90 degrees (including 270 degrees), a 90 degree image turning processing section 4 for writing in a memory the image signal to be inputted in real time from the input section 2 or the image signal converted into the sequential scanning type and for turning the written image data through 90 degrees and for feeding and displaying the data to the vertical display 6, and an output section 5 for outputting the sequential scanning type image signal turned through 90 degrees in real time, wherein the image of the image feeding unit 1 turned through 90 degrees may be fed and displayed in real time on the vertical display 6 which is set in the vertical direction by

turning a laterally elongated display through 90 degrees, the turning image data already subjected to the 90 degree turning process by said 90 degree image turning processing section 4 are always once written in an image memory, the image memory is renewed in real time, and the turning image data read out from the image memory is outputted to said vertical display 6 so that the data may be fed and displayed in real time on the vertical display 6, further comprising an image data output section 10 in which the turning image data written in each area which is obtained by dividing area of said image memory into a plurality of area may be displayed in a corresponding display area of said vertical display 6 divided in a plurality of area in the same manner, and a renewal area switching section 11 structured to make it possible to change each area of said image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal of the turning image data or from the mode of stopping the renewal of the turning image data to the mode of renewing the data in real time, wherein the image signal for advertisement turned through 90 degrees and outputted from said output section 5 is inputted to said vertical display 6 and the image of said image feeding unit 1 may be displayed on said vertical display 6 in real time and said renewal area switching section is set so as to switch a mode of whether or not the renewal of the turning image data is automatically performed in the divided area of the image memory in accordance with a signal contained in the image signal or a situation of a picture image or a still image of the image signal outputted from the image feeding unit 1.

In the display apparatus according to the fifth aspect, turning image data to be renewed in real time in response to the image signal to be inputted in real time from the image feeding unit 1 are displayed as a normal image that may represent a motion picture to the image display area of said vertical display 6 corresponding to one area that is set to renew in real time the turning image data of said image memory, and the turning image data, renewed last, of the turning image data renewed in real time are displayed as a fixed image to said vertical display 6 corresponding to other predetermined area that is set to stop the renewal of said turning image data whereby the fixed image and the normal image of the image signal from the image feeding unit 1 may be displayed to said vertical display 6.

In the display apparatus according to the fifth aspect, the overall image displayable range of the large size vertical display 6 may be essentially occupied by a plurality of divided

image display areas.

In the display apparatus according to the seventh aspect, the overall image displayable range of the vertical display 6 is divided into image display area juxtaposed in a vertical direction.

With the structure according to the invention, it is possible to readily realize an advertising medium that exhibits an advertising effect that could not be attained at all by a laterally elongated image field (laterally elongated display), i.e., a remarkable eye catching effect caused by a poster advertising effect with a vertical display, in which an already present laterally elongated display, for example, a thin large-size laterally elongated plasma display which clearly displays image is set up while changing the orientation in a vertical manner to thereby readily realize the vertical display with ease, an image signal from an image feeding unit is subjected to a 90 degree turning process and outputted to the vertical display, and this 90 degree turning processed image data are displayed in real time on the above-described vertical display. It is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an extremely innovative, practical display apparatus, a display method and an advertising method using the display apparatus and the display method, in which the excellent advertising effect may be expected as a poster advertisement.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an illustrative perspective view showing the use condition of an embodiment.

Fig. 2 is a schematic illustrative block diagram of the embodiment.

Fig. 3 is a schematic illustrative block diagram of the embodiment.

Fig. 4 is an illustrative frontal view showing an image display area of the vertical display of the embodiment.

Fig. 5 is an illustrative frontal view of contents inputted into a display apparatus according to the embodiment.

Fig. 6 is an illustrative frontal view of a display showing the use condition of the

embodiment.

Fig. 7 is an illustrative frontal view of contents inputted into the display apparatus according to the embodiment.

Fig. 8 is an illustrative frontal view of the display showing the use condition of the embodiment.

Fig. 9 is an illustrative frontal view of contents inputted into the display apparatus according to the embodiment.

Fig. 10 is an illustrative frontal view of the display showing the use condition of the embodiment.

DESCRIPTION OF PREFERRED EMBODIMENTS

A mode for embodying the present invention which may be considered as a best mode (how to embody the invention) will now be described in brief while showing its effective result with reference to the drawings.

An image to be inputted to the display apparatus according to the present invention is turned through 90 degrees and is outputted and displayed on a laterally elongated display or a vertical display 6 installed longitudinally by turning the laterally elongated display by 90 degrees to be set in a vertical direction.

Namely, an image signal outputted from an image feeding unit 1 is turned in real time through 90 degrees (270 degrees) by the display unit, fed in real time to the above-described laterally elongated or vertical display 6 and displayed thereon.

Accordingly, for example, the conventional lateral elongated display is simply set in a vertical direction so that the vertical display 6 may be provided. The real time image signal of jump scanning type simply outputted from the image feeding unit 1 without once storing and compiling the image source into software of a personal computer or the like into the vertical display 6 whose orientation has been thus changed is converted into, for example, the sequential scanning type by a hardware structure and turned through 90 degrees, outputted and fed to the vertical display 6 in real time to thereby make it possible to display in a correct image orientation.

Accordingly, for example, the thin plasma display is used and this is set in a vertical

manner whereby it is possible to realize the poster advertisement in which various images may be simply switched over as desired at site. It is therefore possible to obtain the extremely excellent advertising effect that could not be attained at all by the laterally display by this poster advertisement.

Also, the turning image data already subjected to the 90 degree turning process by a 90 degree image turning processing section 4 are always once written in an image memory, and the turning image data read out from this image memory are outputted to the above-described vertical display 6 while this image memory is renewed in real time so that the image data may be fed and displayed in real time on the vertical display 6. At the same time, there are provided an image data output section 10 that is structured so that it divides an area of the above-described image memory into a plurality of areas and may display the turning image data, written in each divided area, on a corresponding image display area, divided into a plurality of areas in the same manner, of the above-described vertical display 6 and a renewal area switching section 11 that is structured so that it may renew each area of the above-described image memory from a mode of renewing the turning image data in real time to a mode of stopping the renewal or from the mode of stopping the renewal of the turning image data to the mode of renewing in real time. The 90 degree turning image signal outputted from the above-described output section 5 is inputted into the above-described vertical display 6 and may be displayed on the above-described vertical display 6 in real time. The above-described renewal area switching section is set for switching whether or not the renewal of the turning image data in the divided area of the image memory is performed automatically, in accordance with the situation of the still image or the motion image of the image signal outputted from the image feeding unit or the signal included in this image signal. For example, the area of the above-described image memory corresponding to a blank space generated in a lower portion or an upper portion of the above-described motion image for advertisement is renewed into the mode of renewing the turning image data in real time and at the same time, the area which has displayed the image signal fed and displayed in real time is renewed into the mode of stopping the renewal of the area whereby the above-described image signal inputted in real time is fed and displayed in a portion which has been the above-described blank space. One site, which has

been renewed last, of the above-described image signal inputted in real time may be displayed as a stationary image in a portion where the image has been displayed.

Namely, it is unnecessary to separately input the image produced by using a personal computer or the like. It is therefore unnecessary to modify this image or to connect and operate the personal computer. Since the blank space may be filled with image extremely easily by using a single image source by one switching operation of the above-described renewal area switching section 11, the system is extremely easy to handle and is less expensive.

Also, for example, the image from the image feeding unit 1 for essentially occupying the entire image displayable area of the vertical display 6 is adapted to be able to be displayed on the vertical display. It is possible to display the above-described motion image for advertisement without any blank space in the image field of the above-described vertical display 6 only by inputting the image signal for the above-described vertical display without any needs to display the image, worked by a personal computer or the like as in the conventional manner, on the blank space.

Namely, since it is unnecessary to separately input the image produced by thus using the personal computer or the like, it is unnecessary to work this image or to connect and operate the personal computer and it is possible to fill the above-described blank space with the image extremely easily by one image source, which is extremely easy to handle and costless.

Furthermore, for example, the turning image data are displayed as a regular image (motion image) that may display the turning image data renewed in real time in correspondence with the image signal inputted in real time from the image feeding unit 1 on one hand, without simply displaying the same image on one image display area of the image display area of the vertical display 6 and the other predetermined image display area and the turning image data renewed last in the turning image data renewed in real time are displayed as a stationary image (still image) on the other hand. In the image where the motion image for propaganda of introducing a commercial product and a still image where a letter telop such as a company name, a product name and the like used in a general TV commercial film are displayed in order, it is possible to store (freeze) in the blank space the

letter telop which should run inherently due to the start of the motion picture. It is possible to constitute the innovative advertisement image which may be displayed on the vertical display together with the motion image.

Consequently, according to the present invention, for example, the laterally elongated plasma display which is large in size and thin and displays an image clearly is set up with its orientation being changed in the vertical direction so that the vertical display may readily be realized. The image signal from the image feeding unit is subjected to the 90 degree turning process in real time and outputted to the vertical display in an easy and stable method, and the image data subjected to the 90 degree process are displayed on the above-described vertical display. Accordingly, it is possible to readily realize the advertisement medium which exhibits the advertisement effect that has not been realized by the laterally elongated image field (laterally elongated display) at all, i.e., the excellent catch eye effect due to the poster advertisement effect because of the vertical display. Accordingly, in synergy with the eye catching effect exhibited by the vertical display, it is possible to realize an innovative image that could not be realized thus far with a less expensive, extremely easy hardware structure without needs to process through the software using a personal computer or the like. Thus, for example, it is possible to provide an extremely innovative, practical display apparatus in which the excellent advertising effect may be expected as a poster advertisement.

An embodiment of the present invention will now be described with reference to the drawings.

In the display apparatus according to the embodiment, an image signal outputted from the image feeding unit 1 such as TV broadcasting, a VTR, a camera, a personal computer or the like is turned through 90 degrees (270 degrees) and inputted into the elongated display 6 which is changed in the orientation of the laterally elongated display by turning the laterally elongated display through 90 degrees.

Namely, the display apparatus according to the embodiment is composed, as shown in Fig. 2, of an image data outputting section 10 in which a jump scanning type image signal of TV broadcasting, a VTR, a camera, a personal computer or the like is converted into a sequential scanning type, and the image signal that has been converted into the sequential

scanning type is turned through 90 degrees (270 degrees) (possible to convert the 90 degree turn image into the sequential scanning type after the turn), the turning image data read out from the image memory are outputted to the vertical display 6 while always once writing to the image memory the turning image data subjected to the 90 degree turning process and renewing in real time the image memory to make it possible to feed and display the image data in real time to the vertical display 6, and the turning image data where a area of the above-described image memory is divided into a plurality of areas and which is written in each divided area may be displayed in a corresponding image display area of the above-described vertical display 6 divided in a plurality of areas in the same manner, and a renewal area switching section 11 in which each of the above-described areas may be changed from a mode of renewing the turning image data in real time to a mode of stopping the renewal in real time or the mode of stopping the renewal to the mode of renewing the turning image data in real time to thereby make it possible to display the image on the above-described blank space without needs of the personal computer.

This image data output section 10 is structured to as to feed and display the turning image data written in real time in the above-described image memory on the above-described vertical display 6 in real time not for each area but together.

Namely, the above-described image data outputting section 10 is structured so that the turning image data to be renewed every time in response to the image signal to be inputted in real time from the image feeding unit 1 are displayed as a regular image (motion picture) which may be displayed as a picture image to the image display area of the above-described vertical display 6 corresponding to one area set to renew in real time the turning image data to be written in the above-described image memory, and the turning image data renewed last in the turning image data renewed in real time are displayed as a stationary image (still picture) to the image display area of the above-described display 6 corresponding to another predetermined area set to stop the renewal of the above described turning image data. Accordingly, the motion pictures or the stationary pictures are displayable in the image display area divided into a plurality of areas, respectively.

Also, the area of the image memory is divided into two so that the overall image displayable range of the above-described vertical display 6 may display the image divided

into the two image display areas having substantially the same area juxtaposed in the up-and-down direction. At the same time, the overall image displayable region may essentially occupy the two-divided image display region (see Fig. 4). Namely, the image to be displayed on this vertical display 6 is composed, in scheme, of the two images arranged in the vertical direction and displayed in the regular laterally elongated display. It is possible not only to display the images displayed in the laterally elongated display as they are without any abnormal feel but also to utilize the image displayable range of the above-described vertical display 6 without any dead space to thereby make it possible to further effectively utilize the large size display.

Incidentally, in the embodiment, the two image areas of the above-described display 6 are juxtaposed in the vertical direction. Three or four image display area or more may be juxtaposed together. In this case, it is possible to display a plurality of still pictures together with the motion picture on the above-described vertical display 6. Also, a plurality of pictures may be arranged in the right and left directions.

Also, the renewal area switching section 11 is set up so that the turning image data are written and renewed in real time in one area selected by the renewal area switching section 11 (possible to stop the renewal) and the renewal is stopped in another area.

Accordingly, in the embodiment, the motion picture and the still picture are displayed in the image display region of the vertical display 6 by a single image source to be inputted (for example, real time NTSC image signal) to make it possible to display the advertisement image without any blank space.

Also, in the embodiment, the above-described renewal area switching section 11 is set up so as to change a mode of whether or not the turning image data in one area of the image memory and the other area are automatically renewed. Accordingly, the position where the motion picture (still picture) is displayed is switched suitably in correspondence with the image to be displayed. An impression that has not been experienced is given to the observer so as to attract the attention so that the extremely innovative advertisement image may be provided.

More specifically, as shown in Fig. 2, the past image data are compared with the current image data in, for example, one area (area A) where a mode of renewing the turning

image data in real time is set. In the case where the condition that no change occurs in the image data is kept for a predetermined period of time, the renewal is stopped and the mode is set up to be changed by the motion picture/still picture detecting circuit 13 structured so that the mode of the other area (area B) may be changed to the mode of renewing in real time when the change of the image data is detected from the condition that no change occurs continuously for the predetermined period of time. Namely, normally, the letter telop or the like that will run in moving on a next scene may be stored (frozen) automatically in the blank space. It is possible to constitute the advertisement image that not only may effectively utilize the large image field but also may propagate more effectively by the still image such as the letter telop in synergy with the motion picture.

Incidentally, in the embodiment, the renewal area switching section 11 is automatically switched over in correspondence with a situation of the motion picture and the still picture of the image signal to be outputted from the image feeding unit 1. However, as shown in Fig. 3, a control signal for operating the above-described renewal area switching section 11 is included in the image signal to be outputted from the above-described image feeding unit 1 so that the mode of setting whether or not the turning image data of one area of the image memory and the other area are renewed automatically when the control signal is inputted may be set to be switched over. In this case, the scene that is considered as the most effective one by the person who produces the image may be displayed intentionally together with the motion picture to thereby enhance the advertisement effect more effectively. Also, it is possible to set the system so that the renewal area switching section 11 may be operated manually as desired. It is possible to set the system so that the switching operation is performed every predetermined period of time (for example, every ten seconds) by a timer.

Also, when the switching operation of the area to be renewed by the above-described renewal area switching section 11 is performed, in this embodiment, one area is once switched to the other area, that is, the switching is performed so that the image display area where the motion picture or the still picture is to be displayed is switched to the upper portion or the lower portion. It is possible to set the system so that the switching is performed plural times automatically when the switching is to be performed. For example, in the case

where the switching is performed twice (even number of times) when the switching is to be performed, the image display areas of the vertical display 6 in which the motion picture or the still picture is displayed are not switched over and it is possible to always display the motion picture and the still picture, for example, in the upper portion and the lower portion, respectively. Also in case of audition near the vertical display, it is possible to constitute the advertisement image that may be subjected to the audition in a good condition. Furthermore, the switching is performed many times for a short period of times so that the image such as the motion picture may be displayed in the display areas on the upper and lower portions due to the residual image phenomenon.

Furthermore, the display apparatus according to the embodiment and a poster advertisement method using this display apparatus will now be described in more detail.

The display apparatus according to the embodiment is composed of an input section 2 connected to an output terminal of the image feeding unit 1 such as TV broadcasting, a VTR, a DVD, a camera or the like for inputting an image signal of jump scanning type to be outputted from this image feeding unit 1 in real time, a quantizing section 7 composed of a decoder circuit for quantizing the image signal of jump scanning type to be inputted from the input section 2 in real time, a scanning type converting section 3 composed of a sequential scanning circuit for converting the quantized image signal into the sequential scanning type image signal, a 90 degree image turning processing section 4 for turning the image by the image signal converted into the sequential scanning type in real time through 90 degrees (including 270 degrees), an image data outputting section 10 structured for always writing the turning image data already subjected to the 90 degree turning process, renewing this image memory in real time, and outputting the turning image data read out from this image memory so as to be fed and displayed in real time on this vertical display 6 and structured so that an area of the above-described image memory is divided into a plurality of areas and the turning image data written in each divided area may be displayed in the image display area corresponding to the above-described vertical display 6 divided in a plurality of areas in the same manner, a renewal area switching section 11 structured so that each area of the above-described memory may be changed from a mode of renewing the turning image data in real time to a mode of stopping the renewal or from the mode of stopping the renewal of the

turning image data to the mode of renewing in real time, and an analogue signal portion 8 composed of a D/A converter for making the image signal, turned through 90 degrees, an analogue signals. The output section 5 is connected to an input terminal of the vertical display 6 set by changing the orientation of the laterally elongated signal receiver (laterally elongated display) through 90 degrees to thereby feed out and display the real time image that has been turned through 90 degree.

The image signal turned through 90 degrees and outputted in real time from such a display apparatus is fed and displayed in real time on the thin vertical plasma display set in a vertical direction by turning a wall hung thin horizontal color display (plasma display used in this case) so that the poster advertisement is achieved by the vertical plasma display where the image from the image feeding unit 1 is displayed in real time.

Incidentally, the jump scanning method means a method in which the transfer amount may be reduced to half. When a single image which is represented by 525 scanning lines is transferred by 60 frames per second, the transfer amount is increased. Accordingly, the one image is displayed by two frames. Namely, the odd number of the scanning lines from 1 to 525 is scanned for the first frame and the even number of the scanning lines from 2 to 524 is scanned for the next one frame. Accordingly, it appears that the motion picture of 60 frames per second is transferred to eyes due to a residual image phenomenon.

The sequential scanning method means a method in which the transfer amount is large but the flicker is negligible because the jump scanning is not conducted and all the 60 frames are transferred.

The sequential scanning circuit is adapted to convert the inputted jump scanning type image signal into the sequential scanning type.

Also, the 90 degree image turning processing section 4 is composed of a memory for quantizing and converting the inputted jump scanning type analog image signal into the sequential scanning type by the sequential scanning circuit and for storing as image data the jump scanning type image signal converted into the sequential scanning type and an address generating circuit for writing the image data into the memory write address that is the designated address of the memory and for reading out the image data from the memory readout address that is the designated address. When the image data are read out from the

memory, the image data are turned through 90 degrees, and this turning image output may be displayed on the vertical display 6 through the D/A converter (analog signal section 8) in real time.

The address generating circuit is adapted to produce the memory write address in writing and the memory read out address where the 90 degree turning image is located in reading out.

Accordingly, in the embodiment, the area of the above-described image memory is divided in correspondence with the divided image display areas of the above-described vertical display. The normal image that may display the motion picture to be renewed in real time may be displayed in, for example, one area of the above-described vertical display by the display area switching section structured to make it possible to change to the mode of renewing in real time the turning image data written in each of these areas or the mode of stopping the renewal. One scene out of the images to be renewed in real time may be displayed in another predetermined area, i.e., a blank space. The blank space which is conventionally filled by using a plurality of image sources by a personal computer may be effectively utilized by a single image source without using any personal computer. It is therefore extremely easy to hand the system in a less expensive manner. The excellent advertisement effect due to the poster advertisement may be expected.

For example, one example will be described. In the case where TV commercial film to be inputted in real time and composed of a still image of a letter telop representing a company name or a product name and a motion picture for advertisement or introduction of the commercial product is displayed for the poster advertisement on a vertical display 6 which is a laterally elongated plasma display according to the display apparatus of this embodiment and which is set like a vertical signboard, for example, when, first of all, such contents that letters shown in Fig. 5 are fed to run, the motion picture is displayed in the upper image display area in real time during the run of the contents. When the run stops and the still picture condition is kept for a predetermined period of time (for example one second) or more, the renewal is stopped in the area (area A) of the image memory for feeding and displaying the image in the upper image display area of the vertical display 6 for displaying the still image. The still picture is displayed in this upper image display area

(see Fig. 6).

Subsequently, when the contents such that the image shown in Fig. 7 fades in are fed and the motion picture is detected, the above-described turned image data are renewed in real time in the area (area B) of the image memory for feeding and displaying the image in the lower image display area opposite to the area where the above-described still picture is displayed. The motion picture is displayed in this area B. When the motion stops and the condition of the still picture is going on as in the above-described case, the renewal stops in this area B. The still picture is displayed in the lower image display area (see Fig. 8).

Furthermore, when the contents composed of motion pictures as shown in Fig. 9, the above-described turning image data are renewed in real time in the area A opposite to the area B where the motion picture is detected in the same manner and the above-described renewal stops. The motion picture is displayed in the upper image display area (see Fig. 10).

Namely, not only is it possible to display the TV image on air which could not be displayed conventionally on the vertical display 6 but also it is possible to display the motion image in the area opposite to the image display area where the still picture is displayed while storing (freezing) this still image on the upper portion or the lower portion of the vertical display 6, for example, whenever the still picture such as a letter telop is displayed. In the TV commercial film, the effect of the letter telop is further enhanced, and the extremely innovative and effective poster advertisement image that could not be attained by the conventional laterally elongated display may be displayed. It is possible to realize an innovative image signboard that may perform the excellent poster advertisement in an inexpensive manner and that is extremely easy to handle without needs of personal computers.

Incidentally, in this embodiment, the case where the NTSC image signal is outputted particularly from the image feeding unit 1 has been described in detail. The above-described image feeding unit 1 according to this embodiment is not limited to an image feeding unit that may output the image signal in real time such as TV broadcasting, a DVD, a VTR, a camera or the like. The unit may include concept of a unit that may once entrain the image signal of a personal computer and feed the image entrained. Accordingly, in this embodiment, not only the NTSC image signal but also the image distributed through an

internet (broad band) may be displayed on the above-described vertical display 6 irrespective of wireless or wired systems.

Also, the system is set so that the scanning method is changed within the image feeding unit 1 whereby it is possible to display the image on the vertical display without needs of the above-described scanning type converting section 3 in the same manner as described above.

Also, in this embodiment, the case where the above-described image signal is turned through 90 degrees and displayed on the vertical display 6 which is set in particular by changing the orientation of the laterally elongated display into the vertical direction has been described in detail. However, it is possible to display the image on a laterally elongated display by turning the above-described image signal through 90 degree.

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Docket No.: _____

DECLARATION AND POWER OF ATTORNEY FOR UTILITY OR DESIGN PATENT APPLICATION (37 C.F.R. 1.63)

実用・意匠特許出願宣言書および委任状 (37 C.F.R. 1.63)

Japanese Language Declaration

私は以下の通り宣言します：

各発明者の住所、郵送先、および国籍は下記氏名の後に記載された通りです。

下記名称の発明に関し請求範囲に記載され特許出願がされている発明内容につき、下記に記載された発明者が本來かつ最初の発明者であると信じます。

表示装置

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DISPLAY APPARATUS

上記発明の明細書は本書に添付されます。

または

上記発明は米国出願番号あるいはPCT国際出願番号 _____ (確認番号 _____) として _____ 年 ____ 月 ____ 日に出願され、
_____ 年 ____ 月 ____ 日に補正されました (該当する場合)。

私は補正が上に明示された場合は補正された特許請求範囲を含む前記明細書の内容を検討し、理解していることをここに表明します。

私は一部継続出願の場合先行出願の出願日から一部継続出願の国内あるいはPCT国際出願日までの期間中に入手された重要な情報を含み、37 C.F.R. 1.56に定義される特許性に肝要な情報について開示義務があることを認めます。

the specification of which is attached hereto

OR

was filed on _____
as United States Application Number or PCT International Application Number _____
(Confirmation No. _____),
and was amended on _____
(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56, including for continuation-in-part application(s), material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

Japanese Language Declaration

35 U.S.C. 119(a)-(d) あるいは (f),
365(b)に基づき特許、発明者、あるいは植物育種
の下記外国出願、または365(a)に基づきアメリカ
以外の少なくとも1ヶ国を指定した下記PCT国際出
願への外国優先権特典をここに主張するとともに
各項目にx印を付けることにより優先権を主張する出
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種書の外国出願またはPCT国際出願を示します。

Foreign Application Number(s) 外国出願番号

<u>261726 (patent)</u> <u>Application Number</u> <u>登録番号</u>	Japan (Country) (国名)
<u>15751 (patent)</u> <u>Application Number</u> <u>登録番号</u>	Japan (Country) (国名)

35 U.S.C. 119(e)に基づき下記の米国仮特許出願の国内
優先権をここに主張します。

<u>Application Number</u> <u>登録番号</u>	<u>(Filing Date)</u> <u>(出願日)</u>
<u>Application Number</u> <u>登録番号</u>	<u>(Filing Date)</u> <u>(出願日)</u>

35 U.S.C. 120に基づき下記米国特許出願、あるいは
365(c)に基づき米国を指定する下記PCT国際出願の利益を
ここに主張し、本特許出願内特許請求範囲の各項目の内
容はU.S.C. 112の最初の項に規定される方法により先
述あるいはPCT国際特許出願で開示されていない限り
37 C.F.R. 1.56に定義される本出願の特許性に
基づき、先行特許出願の出願日から本特許出願の国内
出願日までの期間中に入手された情報を
開示義務があることを認めます。

Domestic or International Application Number(s) 国内あるいは国際出願番号

<u>Application Number</u> <u>登録番号</u>	<u>(Filing Date)</u> <u>(出願日)</u>
<u>Application Number</u> <u>登録番号</u>	<u>(Filing Date)</u> <u>(出願日)</u>

本宣言書内で私自身の知識に基づいてなされたすべて
が真実であり、情報および信ずるところに基づ
いたすべての陳述が真実であると信じられて
ここに宣言し、さらに故意になされた虚偽の陳
述は18 U.S.C.
うき罰金あるいは拘禁または両方による処罰に
またかような故意による虚偽の陳述はそれに基
出願あるいは成立特許の有効性を危うくする可
能性を認識した上でこれらの陳述をなしたこ
とを認めます。

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application(s) which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application(s) having a filing date before that of the application on which priority is claimed.

Priority Claimed?

優先権の主張?

Yes 有り	No 無し
<input checked="" type="checkbox"/>	<input type="checkbox"/>

June 3, 2002
(Filing Date)
(出願日)

July 24, 2002
(Filing Date)
(出願日)

I hereby claim domestic priority under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

I hereby claim benefit under 35 U.S.C. 120 of any United States application(s) or 365(c) of any PCT international application(s) designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in a listed prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge my duty to disclose any information material to the patentability of this application as defined in 37 C.F.R. 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Status: patented, pending, abandoned)
(状態: 特許成立済、係属中、放棄済)

(Status: patented, pending, abandoned)
(状態: 特許成立済、係属中、放棄済)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

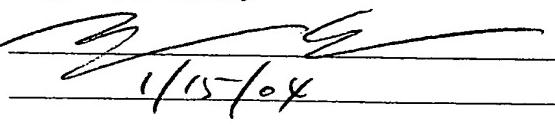
Japanese Language Declaration

委任状：私は下記の米国特許商標局（USPTO）顧客番号のもとに記載されるSUGHRUE MION法律事務所のすべての弁護士を、同顧客番号のもとに記載される個々の弁護士はSughrue Mion法律事務所のみの自由裁量に基づき変更され得ることを認識した上で、本特許出願の手続きおよびそれに関わる米国特許商標局との業務を遂行する弁護士として指名し、本特許出願に関するすべての通信が同USPTO顧客番号のもとに提出された住所宛に送付されることを要請します。

POWER OF ATTORNEY: I hereby appoint all attorneys of SUGHRUE MION, PLLC who are listed under the USPTO Customer Number shown below as my attorneys to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, recognizing that the specific attorneys listed under that Customer Number may be changed from time to time at the sole discretion of Sughrue Mion, PLLC, and request that all correspondence about the application be addressed to the address filed under the same USPTO Customer Number.

STATEMENT OF ACCURATE TRANSLATION IN ACCORDANCE WITH 37 C.F.R. §1.69(b):

The declaration and power of attorney is an accurate translation of the corresponding English language declaration and power of attorney.

Signature 

Date 1/15/04



Direct Telephone Calls to:

SUGHRUE MION, PLLC
(202) 293-7060

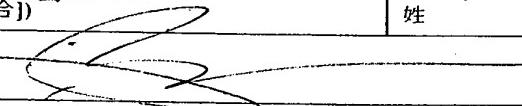
電話連絡は下記へ：

SUGHRUE MION, PLLC
(202) 293-7060

NAME OF SOLE OR FIRST INVENTOR:

唯一あるいは第一の発明者名

Given Name (first and middle [if any]) <u>Yoshinori</u> 名(名およびミドルネーム[該当する場合])	Family Name or Surname <u>HONMA</u> 姓
--	--

Inventor's signature 	Date November 9, 2004 日付
--	-----------------------------

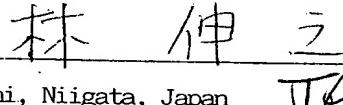
Residence: <u>Yoshida-machi, Niigata, Japan</u> 住所:	Citizenship <u>Japan</u> 国籍
--	--------------------------------

Mailing Address: c/o HONKO MFG. CO., LTD. 1949-1, Oaza-Hokkeda, Yoshida-machi, Nishi-Kanbara-gun, Niigata
郵送先: 959-0296 Japan

NAME OF SECOND INVENTOR:

第二の発明者名:

Given Name (first and middle [if any]) <u>Nobuyuki</u> 名(名およびミドルネーム[該当する場合])	Family Name or Surname <u>HAYASHI</u> 姓
---	--

Inventor's signature 	Date November 9, 2004 日付
--	-----------------------------

Residence: <u>Yoshida-machi, Niigata, Japan</u> 住所:	Citizenship <u>Japan</u> 国籍
--	--------------------------------

Mailing Address: c/o HONKO MFG. CO., LTD. 1949-1, Oaza-Hokkeda, Yoshida-machi, Nishi-Kanbara-gun, Niigata
郵送先: 959-0296 Japan

Supplemental Priority Data Sheet

Additional prior foreign applications:
追加的先行外国特許出願：

Application Number(s) 出願番号	Country 国名	Filing Date 出願日	Priority Claimed? 優先権の主張?
			Yes 有り
			<input checked="" type="checkbox"/>
2002-215829	Japan	July 24, 2002	<input checked="" type="checkbox"/>
2003-11322	Japan	January 20, 2003	<input checked="" type="checkbox"/>
2003-28407	Japan	February 5, 2003	<input checked="" type="checkbox"/>
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Additional provisional applications: 追加的仮出願：

Application Number(s) 出願番号	Filing Date 出願日

Additional U.S. or International applications:
追加的米国または国際出願:

Application Number(s) 出願番号	Filing Date 出願日	Status: patented, pending, abandoned (状態:特許成立済、係属中、放棄済)